Health and Safety Manual

HEALTH AND SAFETY MANUAL

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Employee Health and Safety Handbook

Revised 2/09

Employee Health and Safety Handbook

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I. Introduction

Welcome to Roane State Community College. The skills and talents you bring to RSCC are vital to our mission of teaching and service to the region and state. One of the keys to accomplishing that mission is to ensure that we maintain a safe and healthy campus environment.

This Employee Health and Safety Handbook is intended for RSCC employees, full time and part time, regular and temporary, and all other RSCC employment categories, i.e., student workers, etc. The Handbook has been developed to provide employees with answers to general questions concerning health and safety in the workplace. It is important, however, that you and your supervisor discuss site-specific safety policies and programs for your department. Your supervisor must inform you of the safety procedures and required training you will need to do your job. The college's policies, procedures, manuals, and many other safety resources may be found on the RSCC website (www.roanestate.edu) or by contacting the Health and Safety Office.

Background

In an effort to improve the overall working environment and to provide every working person in the nation safe and healthful working conditions, the Federal Occupational Safety and Health Act of 1970 was enacted. This Act provided an opportunity for the various states to develop their own Occupational Health and Safety Programs. In Tennessee this was accomplished by the Tennessee Occupational Safety and Health Act of 1972, administered by the Tennessee Department of Labor. Roane State Community College is administered by the Public Sector Programs Department which may be contacted at 800-249-8510.

Health and Safety Policy

Roane State Community College strives to provide a safe and healthful working/learning environment for its students, faculty, staff, and visitors. RSCC strives to play a leadership role in its environmental stewardship, health protection, safety standards and in its compliance with applicable laws and regulations. The achievement of these goals is an objective for units at all levels of the institution. Employees and students are expected to be supportive of these goals in their college activities.

Health and Safety Responsibilities

Good environmental health and safety practices are a responsibility of all RSCC employees. The participation and cooperation of each person is essential to a smooth and effective program.

Employee Responsibilities

Your responsibilities as an RSCC employee include:

- Following all health and safety rules and procedures;
- Reporting hazardous conditions to your supervisor;
- Wearing or using prescribed protective equipment;
- Reporting any job-related injury or illness to your supervisor and seeking treatment promptly; and
- Refraining from the operation of any equipment without both proper instructions and authorization.

Supervisor Responsibilities

Each supervisor is responsible for providing a working environment free from recognized health and safety hazards. Specific safety responsibilities of supervisors include:

- Informing new employees of their health and safety responsibilities, procedures, rules and regulations;
- Assuring that required equipment and personal protective devices are provided, maintained, and used;
- Taking prompt action when unsafe acts or conditions are reported or noted;
- Providing for health and safety training and education on a continuing basis;
- Investigating and reporting all on-the-job accidents promptly and requesting medical treatment if necessary;
- Investigating and reporting all job-related health or safety problems promptly;
- Coordinating or conducting internal inspections to assure safe and healthful working conditions;
- Requesting the assistance of the next higher level of supervision regarding budget requests for any health and safety improvements needed; and
- Ensuring their employees are made aware of their rights under the Tennessee Occupational Safety and Health Act of 1972. The State of Tennessee Public Employee, Safety and Health Protection on the Job poster is the authorized means of providing this information. The poster, available from Human Resources, should be posted in each RSCC department.

Unit Head Responsibilities

Deans, Directors, Chairs and other heads of academic and administrative units have primary responsibility for:

- The health and safety of their staff and students;
- Compliance with all applicable laws and regulations; and
- Obtaining and providing funds needed for health and safety improvements and for making those improvements;
- Requirements and responsibilities established by agencies external to the college.

Health and Safety Office Responsibilities

Health and Safety is responsible for development, oversight, and management of environmental health and safety programs that protect the environment, provide safe and healthy conditions for work and study, and comply with applicable laws and regulations. Health and Safety provides educational programs, technical assistance, and health and safety services to the college community. The office also functions as a consultant to deans, directors, and heads of academic and administrative units, other staff members, and students in all areas of environmental health and safety. The Health and Safety Office makes health and safety investigations as necessary.

RSCC Safety Committee Responsibilities

The RSCC Safety Committee is responsible for:

- Recommending policies and programs to insure a safe environment for students, staff, faculty, and visitors on campus, except in areas delegated to other bodies, i.e., Bio-Safety;
- Monitoring the campus to ensure that college safety policies, procedures, and facilities are in compliance with applicable, state, and/or local code requirements;
- Reviewing, evaluating, and recommending for approval the college Emergency Response Plan.

The Committee reports to the President through the Vice President of Financial Services.

II. Safety Practices

Communication of Hazards in the Workplace

Faculty, staff, and students must be informed of any recognized hazards in their workplace. It is the responsibility of supervisors to provide adequate health and safety orientation related to standard operating procedures, hazards, and personal protective equipment. You should receive this orientation prior to working in the area.

Please make sure you understand all information presented at the orientation. If you have any language barriers, please explain these to your supervisor. Your supervisor must ensure that all applicable policies affecting your work place is readily available.

Personal Protective Equipment (PPE)

Faculty, staff, and students may be required to wear PPE while performing their jobs, i.e., welding, asbestos removal, painting, etc. or when they are in certain environments (for example, chemical laboratories). Your supervisor will tell you the specific PPE you must wear and ensure that you know when it must be worn. The following is a general guide for selecting what may be necessary. Additional information may be found in the RSCC Personal Protective Equipment Program.

Eye and Face Protection

Proper eye protection reduces your chances of injury if an accident does occur. Most workers who have had eye injuries were not wearing eye protection at the time.

All eye and face protective equipment must comply with the American National Standards Institute (ANSI) guidelines and be marked directly on the piece of equipment. Protective eye wear includes safety glasses, goggles and face shields.

Operations listed below are a few examples where eye and face protection may be required:

- Handling acids or caustics.
- Welding.
- Woodworking, i.e., sawing, drilling, sanding, etc.
- Metal working.
- Chiseling.
- Metal casting.
- Handling solvents.
- High pressure washing.
- Handling human tissue, blood, or other bodily fluids.
- Using Lasers.

Chemical hazards – To protect the eyes and face from splashes when handling bodily fluids or dispensing corrosive liquids; non-vented chemical goggles or safety glasses with side shields and full-face shield offer the best protection. Safety glasses are the minimum protection recommended of all operations involving hazardous chemicals.

Physical hazards – When using high-pressure cleaning or spray equipment, safety glasses with side shields and full-face shields are the recommended PPE.

Those work activities that produce chips or dust—such as grinding/drilling, power fastening, or power tools—require safety glasses with side shields as a minimum protection level and in some instances may also require the use of a full-face shield.

Welding – Welding operations require a full welding hood with the appropriate tinted vision screen. Safety glasses with side shields are also required to be worn under the hood.

When doing acetylene oxygen torch soldering, brazing, or cutting, appropriately tinted safety glasses with side shields or tinted goggles are the appropriate PPE.

Hand/Arm and Body Protection

Almost 75% of workers who suffered hand injuries were not wearing gloves. Although no glove will offer you total protection from every hazard, wearing the correct glove will help you prevent hand injury. Make sure the glove(s) you use in your work area are designed to protect against the particular hazard(s) that have been identified.

The following are general guidelines in selecting and using gloves:

- Use metal mesh or cut resistant gloves to prevent cuts from broken glassware, knives or sharp other objects.
- Use leather gloves for mechanical operations or where repetitive motions are involved to prevent blisters, calluses, and abrasions. Leather gloves also protect against rough surfaces, sparks, and moderate heat.
- Use cotton or other fabric gloves to protect against dirt and dust, or to better grasp slippery objects.
- Use rubber, neoprene, vinyl, or nitrile gloves to protect against chemicals.
- Workers who are sensitive to natural rubber latex should avoid direct contact with latex gloves and other rubber products.
- Check gloves before wearing to make sure they're not cracked, torn, or damaged in any way.
- Make sure gloves fit properly. They should cover your hands completely and be comfortable enough for you to perform your job.
- Take care to avoid contamination—don't let your bare skin touch contaminated gloves.
- Dispose of single-use gloves in the proper containers.

When using hazardous chemicals, specialized gloves offering protection for specific chemical families, a laboratory coat, and at times a splash apron are the appropriate PPE.

Insulated gloves and arm sleeve covers are recommended when handling hot or cold materials.

Head and Foot Protection

Occasions may develop during the work day or job duty when the use of a hard hat or other head protection and foot protection is necessary. All hard hats or safety shoes must meet the requirements for protection outlined by the American National Standards Institute (ANSI).

Hearing Protection

If your work areas or specific job tasks have been designated as requiring hearing protection, you must wear approved protective equipment. Personal stereos or Walkman's® are not considered approved hearing protection. If you have questions about high noise levels in your work area, you should ask your supervisor or contact the Health and Safety Office for more information.

Respiratory Protection

Some employees are required to wear respirators for specific job duties. Respirators include dust masks, air-purifying negative-pressure respirators, self-contained breathing apparatus, supplied-air respirators, and other such devices. If you wear one of these respirators, you must have a physical exam and you must be "fit tested" and trained before using it on your job.

Documentation

Supervisors are responsible for maintaining written copies of safety programs and employee training documentation. This documentation is a requirement of most regulatory standards. Regulatory agencies may ask to see these documents during an inspection.

Training

You may be required to attend in-house training sessions on such topics as bloodborne pathogens, hazard communication, hazardous waste, asbestos awareness, or laboratory safety. Supervisors of affected employees should exercise a measure of accommodation for these needing training. A checklist to help you understand which RSCC Health and Safety programs apply to you may be found on page 1-11.

In some cases, supervisors may conduct specialized training sessions (e.g., safety procedures for using powered equipment). Supervisors can contact the Health and Safety Office for information or assistance in preparing training materials. Specialized training, e.g., forklift, asbestos awareness may be provided by outside training consultants.

Training should be provided:

- When an employee is hired, when an employee is given a new work assignment for which training has not previously been given; and
- When a new hazard (chemical or physical) is introduced into the workplace.

At a minimum, health and safety training for employees must include:

- Recognition of health and safety hazards;
- General and job-specific health and safety practices; and
- State regulations and RSCC health and safety policies applicable to the job.

General Safety Rules

- All classrooms, laboratories, offices, shops, storerooms, and passageways will be kept orderly and free from unnecessary debris.
- Floors will be cleaned and waxed in such a manner as to keep slipping hazards to a minimum.
- Flammable liquids will not be used to clean floors, clothing or equipment.
- Trash containers in offices, laboratories, shops and other work areas will be emptied each working day, preferably at the end of normal working hours, or thereafter.
- Furnace, mechanical, and air handling rooms will not be used as storage areas.
- Worktables, stools, benches, tools and equipment will be maintained in good repair.
- Electrical and mechanical equipment will have moving parts adequately guarded.
- All electrical equipment will be properly grounded.
- Appropriate personal protective equipment and/or clothing will be worn in all areas and/or during operations requiring such use.
- Unauthorized persons will not tamper with electrical fuse boxes, alter existing wiring, or install new electrical wiring.
- Electrical cords will be maintained in good condition.
- Extension cords must be the type that contains a built-in overload circuit breaker, they must not be extended and used outside the room in which the fixture outlet is located, and must not be located in such a manner as to create a tripping hazard. Where cords must be placed across paths of travel, cord covers must be used.

Safe Handling of Laboratory Glassware

Supervisors in departments that use glassware must develop procedures to handle all glassware safely and ensure that all employees and/or students are informed of these procedures. Areas that should be addressed include:

Glassware inspection;
Compatibility factors;
Effects of extreme temperatures and pressure;
Matching glassware to its intended use;
Use of Personal Protective Equipment;
Storage and handling;
Washing and clean-up;
Assembling apparatus;
Safe disposal of broken or disposable glassware

Emergency Response Procedures

The establishment of well thought out emergency response plans is one of the cornerstones of an effective safety program. Evaluating potential emergency situations, developing emergency procedures, and conducting practice exercises can help save lives. Detailed instruction regarding emergency procedures may be found in the RSCC Emergency Response Plan.

You should become familiar with the posted evacuation plan and how you should respond to a fire or other emergency in your building and be prepared to evacuate the building when necessary.

When the Fire Alarm Sounds

If you are in any RSCC building and discover a fire, please take the following actions:

- Leave the building immediately.
- Pull the nearest fire alarm pull station and notify Security.
- Leave the area quickly, closing doors as you go to contain the fire and smoke.
- If you encounter smoke or flame during your escape, use an alternative exit. If you must exit through smoke, crawl on your hands and knees.
- Do not re-enter the building until emergency response officials have declared that it is safe to do so.

In the event of a serious injury requiring immediate medical assistance or any other emergency, remain calm, call 911, notify the dispatcher of the type and location of the emergency, answer any questions the dispatcher may have and stay on the line until released by the dispatcher.

Employee Accidents

You must report all work-related accidents, injuries, or illnesses to your supervisor. If an injury or illness requires medical attention, supervisors must report them to Human Resources.

The supervisor must complete an OSHA Form 301, Supplementary Record of Occupational Injury or Illness, and forward it to Human Resources, within two working days. This form may be completed over the phone or faxed followed by a hard-copy. Forms are available at Human Resources or may be downloaded from the RSCC Human Resources website.

Student or Visitor Accidents

Any faculty or staff member who witnesses, is involved in, or is informed of an accident with a student or visitor should report the accident to Security.

Automobile Accidents

All vehicle accidents occurring on campus will be reported to Security, who will notify other offices or officials as appropriate.

All accidents involving State vehicles must also be reported to the Director of the Physical Plant.

III. Health and Safety Program Checklist

The following checklists have been developed for you and your supervisor to understand the hazards and applicable Health and Safety Programs associated with your workplace or assigned duties. If you answer yes to questions in the 1st column, then the corresponding RSCC program and training requirements are, most likely applicable. Training may be provided by your supervisor, designated staff, Health and Safety, or outside vendors. Training must be provided and documented before performing any of the listed activities.

Checklist for Work Areas

Activity	Applicable Program
Are there hazardous chemicals in your work area?	Hazard Communication Program
Do you work with hazardous chemicals?	Hazardous Waste Management Guide
Do you provide first aid services or do you work with human blood, body fluids or tissues?	Bloodborne Pathogen Program
Does your work require hearing protection?	Hearing Conservation Program
Do you use or service equipment for which an unexpected restarting could cause injury?	Lockout-Tagout Procedures
Are you required to enter any confined spaces?	Confined Space Policy
Do you operate industrial trucks (e.g., forklift, bucket truck, etc.)?	RSCC Forklift Operator's License is required
Do you use respirators of any kind (including dust masks)?	Respiratory Protection Policy
Does your area have fire extinguishers?	Emergency Preparedness Plan RSCC Emergency Desk Reference Fire Protection and Life Safety Policy
Do you work in a laboratory that uses infectious agents, human blood or tissue, bodily fluids or other biohazards?	Bloodborne Pathogen Policy
Do you work in a laboratory that uses radioisotopes?	Contact Health and Safety Office
Do you work in a laboratory that uses hazardous chemicals?	Chemical Hygiene Plan Hazard Communication Program Hazardous Waste Management Plan

Activity	Applicable Program
Do you work on any of the Laboratory Hoods, Refrigerators or Drains	Permit Policy Laboratory Chemical Hoods Policy
Are you doing any work involving welding, cutting or grinding?	Permit Policy
Are you doing any building campus renovation projects?	Asbestos Policy Personal Protective Equipment Policy
Do you work on equipment containing ozone depleting refrigerants?	Refrigerant Policy Clean Air Act *Under Construction*
Are you servicing the Fire Protection Systems?	Fire Protection Impairment Program

Health and Safety Programs

Health and Safety has developed a number of model policies/plans to help provide for the health and safety of RSCC employees. Many of these policies/plans are mandatory to ensure compliance with state and federal regulations. The following policies/plans and safety manuals are available:

- Bloodborne Pathogens
- Emergency Response Plan
- Asbestos
- Refrigerant Management
- Permit Policy
- Hazardous Waste Management Plan
- Chemical Hygiene Plan
- Lockout/Tagout
- Confined Space
- Fire Protection and Life Safety
- Fire Protection Impairment Program

For copies of these policies/plans and safety manuals, contact the Health and Safety Office. These and other safety resources are also available on the Health and Safety website.

A copy of the Employee Health and Safety Handbook has been given to me at the time of my employment. I promise to read the contents and to ask for an explanation of any parts that I do not understand. The Employee Health and Safety Handbook describes important information about RSCC, and I understand that I should consult the Health and Safety Officer or my supervisor regarding any questions not answered in this Handbook.

Since the information, policies and procedures described here are subject to change, I acknowledge that revisions to the Handbook may occur. Only the RSCC Health and Safety Committee is authorized to adopt any revisions to the policies in this Handbook.

Signature_____Date_____

STATE UNIVERSITY AND COMMUNITY COLLEGE SYSTEM OF TENNESSEE
OCCUPATIONAL HEALTH AND SAFETY PLAN

March, 1976

Part I
Supporting Data And Information

This plan is adopted by the Tennessee Board of Regents as the procedure by which the State University and Community College System of Tennessee will implement Health and Safety programs for colleges and universities under the governance of the Board.

The Tennessee Occupational Health and Safety Act requires each administrative department or agency of the State to establish and maintain an effective and comprehensive occupational health and safety program. The Occupational Health and Safety Public Sector Plan issued by the Tennessee Department of Labor and Tennessee Department of Public Health in February 1974, is the Tennessee plan for implementing requirements of the Tennessee Occupational Health and Safety Act as it applies to State agencies.

Objectives Of The Plan

1. To provide the faculty, administration, and employees in the colleges and universities under Board of Regents governance with the greatest possible protection against health and safety hazards in the work environment.

2. To establish the procedures and criteria which must be complied with by the institutions to meet the regulations of the Departments of Labor and Public Health.

3. To provide procedures by which the institutions may obtain consultation services.

Requirements Of The Tennessee Act

Section 19 of the Tennessee Occupational Health and Safety Act requires each administrative department, commission or other agency of the State government to establish and maintain an effective and comprehensive occupational health and safety program and to comply with standards promulgated under this Act. The head of each agency is charged with this responsibility which includes the provision of a safe and healthful place and conditions of employment. He/She must acquire, maintain and require the use of safety equipment, and devices reasonably necessary to protect employees.

In addition, the head of each agency must make, keep and preserve adequate records of all occupational accidents and personal injuries for proper evaluation and necessary corrective action as required by the Act. These records must be made available to the Commissioner of Labor through an annual report. The head of each agency is required to consult with the Commissioner of Labor and the Commissioner of Public Health, as appropriate, regarding health and safety problems considered to be unusual or peculiar to the agency's activities or for responsibilities that cannot be achieved under a standard required by the Act. The agency head also is expected to devise a program of inspection and sanctions required to carry out the purposes of the Act and to provide reasonable opportunity for the participation of employees in the effectuation of the objectives of the Act, including the opportunity to make anonymous complaints concerning conditions or practices which may be injurious to employee's health and safety.

The Commissioner of Labor must submit annually to the Governor and the General Assembly a summary or digest of reports submitted to him/her by the various agency heads, together with his/her evaluation of the progress toward achievement of the purposes of the Act, the needs and requirements in the field of occupational health and safety, other relevant information and his/her recommendations derived from these reports.

Whenever the Commissioner of Labor or the Commissioner of Public Health has reason to believe that an agency is failing to meet its responsibilities in abiding by the provisions of the Act, he/she may issue the agency head a written notification stating in what respect the agency has not adequately met its responsibilities. The agency head has 20 days in which to respond to the Commissioner. Should he/she fail to respond, the Commissioner shall submit a copy of such notification to the Governor with a request that such appropriate action be taken to bring the agency into compliance with the Act. Within the 20 day period the agency head may advise the Commissioner of his/her intention to contest the notification. In this case, the Commissioner shall promptly notify the Occupational Health and Safety Review Commission. The Review Commission, created and defined by Section 15(a) of the Tennessee Occupational Health and Safety Act, shall afford an opportunity for a hearing and shall issue to the Governor its findings of fact and recommendations for action. Whenever the Commissioner of Labor or the Commissioner of Public Health has reason to believe that the failure of an agency to meet its responsibilities under the Act creates imminent danger of death or serious physical harm to any employee of the State, the concerned Commissioner shall immediately submit to the Governor, a statement of the reasons for his/her belief, together with recommendations for immediate abatement of the hazard.

Requirements Of The Public Sector Plan

The Occupational Health and Safety Sector Plan reaffirms the responsibility of the Head of each State agency to establish and maintain an effective and comprehensive Occupational Health and Safety Program consistent with standard promulgated under the act. The plan provides for a State agency program which will be administered by the Commissioner of Labor with the Commissioner of Public Health as an advisor. It provides criteria for the development of agency programs and establishes the health and safety standards applicable to the program. The plan provides procedures for obtaining consultation, training, and technical services from the

Department of Labor and the Department of Public Health and provides for the formation of the Tennessee Health and Safety Council to promote the objectives of the act and to serve as a mechanism for professional training and to permit exchange information among State agencies. The plan provides for agency programs to be monitored by inspections of agency work sites by the Commissioner of Labor or the Commissioner of Public Health and programmed evaluations through conference with individuals responsible for health and safety and through an analysis of accident and illness reports. The plan provides for enforcement of the act based on administration sanction, arbitration, and understanding of goals by agency heads and action by the government.

Responsibilities And Rights Of Agency Heads

1. Each agency head will organize an agency-wide health and safety program which will meet criteria established by the Commissioner of Labor.

2. Each agency head will appoint an individual whose responsibility will include the agency's health and safety program.

3. The program must comply with standards and regulations promulgated by the Department of Labor and the Department of Public Health.

4. The program must include a mechanism whereby employees will have an opportunity to participate in the effectuation of objectives included in the Tennessee Occupational Health and Safety Act, including the opportunity to make anonymous complaints concerning conditions or practices which may be injurious to employee health and safety.

5. The agency head will have the right to contest any order, directive, or recommendation of the Commissioner. He/She shall first ask for a conference with the Commissioner or his/her designated representative to resolve any differences or to find alternative solutions to the problem. Failing in this effort, the agency head, within 20 days after receipt of the notification, may notify the Commissioner of his intention to contest the notification. Following receipt of the notice to contest, the Commissioner shall promptly notify the Review Commission which shall afford the agency head an opportunity for a hearing. The Review Commission shall issue to the Governor its findings of fact and recommendations for action.

6. After all remedial procedures outlined in Paragraph 5 have been completed, the decision of the Governor shall be final and definitive with respect to the order, directive, or recommendation.

7. The agency head may request technical and administrative assistance and service from the Commissioner of Labor and the Commissioner of Public Health in the implementation and operation of the program.

Organization Of The State University And Community College System Of Tennessee

Chapter 838 of the Public Acts of 1972, established a State University and Community College System of Tennessee. The elements of this system include the State Universities, the State Universities, the State Community Colleges, the Board of Regents, and the Chancellor. The Board of Regents consists of 16 members, with five members being appointed by statutory requirement and remaining eleven appointed by the Governor, subject to confirmation by the Senate. The purpose of the Board of Regents is to:

1. Establish, govern, manage, and control the Tennessee State University and Community College System. The Board of Regents views itself as the responsible agency for the purposes and proposals of the System subject only to legislative mandated review.

2. Develop a system organization that will provide coordination of the system of institutions while at the same time preserving the unique qualities, integrity, and regional and community relationships of each of the institutions.

3. Provide essential centralized services and uniform procedures which will increase the individual effectiveness and improve operations of each of the institutions of the system.

4. Increase the ability of the institutions and the system to compete and account for state appropriations, while providing more efficient utilization of state resources provided for their support.

5. Assure more effective lay and public direction and system policy guidance thus preserving citizens' control of higher education in Tennessee.

The Chancellor serves as the Chief Executive officer of the State University and Community College System. The Chancellor is responsible to the Board of Regents for the prompt and effective execution of all resolutions, policies, rules and regulations adopted by the Board for the ordering and operation of the entire system and for the government of any or all of its branches. In order to enable him/her to discharge these duties, he/she is provided with broad discretionary powers and he/she is empowered to act for the Board in the interim when the Board is not in session. In carrying out these duties, he/she serves as the principle channel of communication with the presidents of the institutions.

The Board of Regents appoints a President for each college or university who serves as the executive head of the institution and of all its departments. The president exercises such supervision and direction as will promote efficient operation of the institution. He/She is responsible to the Board, through the Chancellor, for the operation and management of the institution and for the execution of all directives of the Board and the Chancellor. The president serves as the efficient medium of communication between the campus and the Chancellor, and also has the right of direct access to the Board by submitting reports to the Board at its regular

meetings and by meeting with the Board on such occasions. He/She is responsible for making periodic reports to the Board through the Chancellor of the working conditions of the institution under his control.

The president of each agency under the Board of Regents governance, is granted Considerable freedom in directing the affairs of his/her institution within a frame work of broad policy guidelines set down by the Board. The predominant source of funding for the institutions is from legislative appropriation. However, additional income is generated through tuition, fees, and other sources of local revenue. The expenditure of funds is controlled by line item budget, which is approved by the Board of Regents, the Tennessee Higher Education Commission, and the Commissioner of Finance. Therefore, the establishment of new positions necessary to administer an institution Health and Safety program or funds required for capital equipment to correct health and safety hazards must be approved by agencies external to the State University and Community College System.

Part II
Program Administration

Organization

General administrative authority for the State University and Community College System programs is contained in Section 19 of the Tennessee Occupational Health and Safety Act, which assigns responsibility to each administrative department, commission, board, division, or other agency of the State to establish and maintain an effective and comprehensive Occupational Health and Safety program consistent with the standard promulgated under this act. As Chief Executive officer, the Chancellor is responsible to the Board of Regents for the prompt and effective execution of the State University and Community College System Occupational Health and Safety Program.

The Chancellor may appoint a member of his/her staff to serve as the Board of Regents Occupational Health and Safety officer and delegate to him/her the responsibility for program administration. The Occupational Health and Safety officer will be responsible to:

1. Advise the Chancellor and the Board on policy and program matters.

2. Keep abreast of problem areas in program implementation and develop solutions to these problems.

3. Upon request of the institutions, arrange for consultation and educational services with the Department of Labor and the Department of Public Health.

4. Evaluate progress toward meeting goals of the State University and Community College System program.

5. Serve as a liaison between the institutions and the Department of Labor and the Department of Public Health on all matters relating to the implementation of the program.

The Director of Physical Facilities of the Tennessee Board of Regents shall serve as the Board of Regents Occupational Health and Safety officer.

The President of each college or university under the jurisdiction of the board of Regents, as executive head of the institution shall be responsible for the prompt and effective execution of the Occupational Health and Safety program at that institution. He/She shall appoint an individual whose responsibility will include the institution's health and safety program. Each institution will develop its own written plan for complying with the Tennessee Occupational Health and Safety Act, the Occupational Health and Safety Public Sector Plan, and this plan. Two copies of the plan will be submitted to the Chancellor, Tennessee Board of Regents.

Standards And Regulations

Standards to be Enforced

The Tennessee Occupational Health and Safety Act assigns responsibility to the Commissioner of Labor and the Commissioner of Public Health to promulgate Occupational Health and Safety standards and regulations for the State of Tennessee. On June 21, 1974, the Board of Regents adopted the Occupational Health and Safety standards for the State of Tennessee as the minimum health and safety standards for the State University and Community College System of Tennessee. It is, therefore, incumbent upon each institution to comply with all standards and regulations promulgated by the Commissioner of Labor and the Commissioner of Public Health.

Promulgation of Standards

The plan for State Agencies provides procedures for promulgation and revocation of standards. Upon receipt of notification of a proposed change in standards, the Chancellor will notify each President of the proposed change. The Presidents shall notify the Chancellor of any proposed revisions or objections to the proposed change for referral to the appropriate Commissioner for consideration.

Penalties And Sanctions

Enforcement of the plan will be based upon understanding of goals by institution presidents, arbitration, administrative sanctions, and actions by the Tennessee Board of Regents. The Chancellor shall provide guidance and direction of the program to develop motivation amongst the presidents to carry out the intent of the program, and to meet established objectives and goals. Within the State University and Community College System of Tennessee, the right to exercise administrative sanctions towards any institution of the System is reserved to the Board of Regents.

Duties Of Rights Of Employees

It is the duty of all employees to cooperate with the Chancellor, the OSHA Officer, the president of the institution and the individual responsible for Health and Safety in furthering the objective of the Tennessee Occupational Health and Safety Act.

Any employees who fails to wear or use safety or health equipment prescribed by the institution or fails to perform his/her tasks in such a manner that he/she does not present a hazard to himself/herself, his/her fellow workers, or the general public or performs his/her duties in such a manner after warning by the institution that equipment and property may be damaged is subject to dismissal by the president. Any employee dismissed for any of these reasons may submit an appeal from this action to the Board of Regents in accordance with Board of Regents personnel policies and procedures.

Institutional plans will contain procedures by which employees may submit complaints concerning conditions or practices which may be injurious to the employees safety or health.

If after submitting complaints to the president of the institution, he/she fails to give consideration to the employee complaint or if there is a disagreement between the president and the employee regarding the nature and severity of the hazard, the employee may submit his/her complaint to the Chancellor for consideration of the Board of Regents. If the complaint is not resolved by the Board of Regents, the employee has further appeal rights as described in the Occupational Health and Safety Public Sector Plan of the Tennessee Department of Labor and the Tennessee Department of Public Health. No employee will be transferred, dismissed, or given a position in lower grade because of having submitted the complaint concerning the conditions or practices which may be injurious to the employees' safety or health. An employee who believes that he/she has been transferred, dismissed, or given a lower pay position, may appeal this action to the Tennessee Board of Regents in accordance with personnel policies and procedures of the Board.

Employees are entitled to review the annual health and safety reports of the institution and the Board of Regents and to protest any portion of the report which is deemed to be inaccurate or fails to portray real and existing conditions.

Employees will not be required to submit to medical examinations, immunization, or treatment if they object thereto on religious grounds, except where it is necessary for the protection of the Health and Safety of others.

All employees will be notified of their rights and duties utilizing the memorandum contained in this document.

Technical Services

The Department of Labor and the Department of Public Health have the responsibility to provide needed consultation, training, and technical services to State Agencies. Where such services are required, a request may be made to the Board of Regents Occupational Health and Safety Officer who will coordinate the provision of the desired services.

Records And Reports

General Requirements

Record keeping at each institution will be in accordance with the requirements of the Occupational Health and Safety Public Sector Plan.

A. Annually the President of each institution will submit within thirty days after the end of each calendar year a report to the Chancellor on his Health and Safety Program. The report will:

1. Be certified that to the best knowledge of the President that the institution is complying to the standards and regulations of the Department of Labor and the Department of Public Health. For work sites that do not comply, the president will detail the reasons for noncompliance and offer an abatement.

2. Provide a summary of health and safety activities during the past year and bring to the attention of the Chancellor unusual problems relating to the health and safety within his/her institution.

3. Advise the Chancellor of any health and safety hazard which can not be abated because:

    1. adequate financial resources are not available,
    2. technical solutions can not be ascertained or devised,
    3. administrative reasons outside the jurisdiction of the institution.

4. Contain information on all reportable accidents and injuries on forms provided by the Department of Labor.

5. Provide institutional plans for the forthcoming year to improve health and safety conditions.

B. The above information will be consolidated by the Chancellor and submitted to the Commissioner of Labor not later than forty days after the end of each calendar year.

Reporting of Serious Accidents

In the event of a serious accident resulting in fatalities, severe injuries, or extensive property loss, a report shall be made to the Chancellor, the Tennessee Board of Regents and the Commissioner of Labor in order that as soon as possible but in no case more than forty-eight hours after the occurrence, the Chancellor will notify the Commissioner of Labor as required by the Occupational Health and Safety Public Sector Plan. The institution should proceed as rapidly as possible with a complete investigation and forward a report of the investigation to the Chancellor upon completion. Such accidents will also be investigated by the Commissioner of Labor and upon receipt of the investigation report from the Commissioner of Labor, the Chancellor will consult with the President of the institution concerned to insure the appropriate preventative measures are implemented. Remedial steps being taken will be reported to the Commissioner of Labor by the Chancellor.

Inspections

The primary inspection program will be conducted at the institution level by the Campus Health and Safety Organization. The frequency of inspection of worksites will be established commensurate with the nature of operations conducted at each work site, with those involving the greatest potential hazards receiving greatest emphasis. All work sites regardless of potential hazard will be inspected by the Department Head at least monthly and by the Campus OSHA official or inspector at least semi-annually. At least once annually, the Board of Regents Occupational Health and Safety Officer will review the institutional inspection program and

inspect selected work sites to evaluate the effectiveness of the campus program. These inspections will be supplemented with consultations and assistance from the Department of Labor and Department of Public Health as necessary to insure the effectiveness of the inspection program, and to obtain technical advice on unusual safety problems.

Funding Support

The administration of the Health and Safety program falls within the scope of the general administrative responsibility of the institution. Funding support for the operational aspects of the program will be provided within the frame work of the institutional budget. Likewise, funding for major maintenance and minor alterations and improvements necessary to abate health and safety hazards will be included within the institutional budget. Renovations, alterations, or major improvements requiring capital outlay which cannot be accommodated within the institutional budget will be submitted as a part of the Capital Outlay request for funding as a part of State Capital Budget.

Part III
Program Implementation

Implementing Actions

On December 18, 1973, the Chancellor of the Tennessee Board of Regents informed the President of each institution of the requirement to establish and maintain an Occupational Health and Safety program as contained in the Occupational Health and Safety Act of 1972, requested that they: designate a staff member responsible for the institutional Occupational Health and Safety program; begin preparation of a plan to implement the program; and establish record keeping as required by the Act. On May 14, 1974, a workshop was held at the Board of Regents with campus, Department of Labor, Department of Public Health, and Board of Regents representatives to provide campus health and safety administrators with an in depth overview of program requirements. During the period July 1974 through June 1975, the campuses established their health and safety organizations and implemented record keeping and reporting systems. On June 21,1974, the Board of Regents adopted a policy which stated the intent of the Board to provide safe and healthful working conditions for all employees to comply with the Act and adopted Occupational Health and Safety Standards for the State University and Community College System of Tennessee. The policy further required development of plans by the Chancellor and the institutions to assure compliance. Through campus level inspections as well as Hazard Evaluation visits by Department of Labor and Department of Public Health representatives principle safety hazards have been identified and corrective programs undertaken.

Program Goals

The following program goals are established for the period July 1, 1975 through June 30, 1978:

1. By June 30, 1976: Completion and approval of institutional plans.

2. By June 30, 1976: Conduct an on site review of the Health and Safety Program at each institution to evaluate effectiveness of program administration.

3. By June 30, 1976: Identify all health and safety hazards which cannot be eliminated by campus action due to inadequate resources, technology, etc. Develop a plan to eliminate these hazards.

4. By June 30, 1977: Conduct an in depth review of program effectiveness through analysis of reports, statistics, and on site inspections. Initiate corrective action as necessary.

5. By June 30, 1978: Complete all abatement actions. Complete all administrative actions to obtain optimum program effectiveness.

OSHA GENERAL INDUSTRY STANDARDS

Introduction

The following information is the text of a booklet produced by OSHA that is intended to provide a non-exhaustive, generic overview of particular standards related topics. This information is public domain and may be reproduced, fully or partially, without permission of the Federal Government or RSCC. However, because interpretations and OSHA enforcement policy may change over time, users of this handbook should consult current administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts. This information is available internet at http://www.osha.gov.

GENERAL INDUSTRY DIGEST

U.S. Department of Labor
Robert B. Reich, Secretary

Occupational Safety and Health Administration
Joseph A. Dear, Assistant Secretary

OSHA 2201
1994 (Revised)

Foreword

The General Industry health and safety standards contained in this booklet are to aid employers, supervisors, and health and safety personnel in their efforts toward achieving voluntary compliance with OSHA standards in the workplace.

Although the digest does not contain all the General Industry health and safety standards, the ones presented here are (1) standards most frequently overlooked by the employer, and (2) standards covering particularly hazardous situations. The standards are presented alphabetically followed by the reference to the appropriate standard. With few exceptions, the standards in this digest are from Title 29 of the Code of Federal Regulations (CFR), Part 1910.

This booklet also contains (1) a brief discussion of the essential elements of a generally applicable health and safety program, (2) a reminder to the employer of the advisability of regular employee training for job health and safety, and (3) a description of OSHA's Onsite Consultation Program available to the employer.

Remember... This booklet is only a digest of basic applicable standards. This digest should in no way be considered as a complete substitute for any provisions of the Occupational Safety and

Health Act of 1970, or for any standards promulgated under the Act. The requirements contained herein have been summarized and are abbreviated. The actual source standards are noted at the end of each paragraph; the CFR should be consulted for a more complete explanation of the specific standards listed.

Health and Safety Program Management Guidelines

Effective management of worker health and safety protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and related costs. In 1982, OSHA began to approve worksites with exemplary health and safety management programs for participation in Voluntary Protection Programs (VPP). More information on VPP can be obtained from your OSHA Regional or Area Office.

In 1989, OSHA issued recommended guidelines for the effective management and protection of worker health and safety. These guidelines are summarized in the following paragraphs.[1]

[1] The complete original text of the non-mandatory guidelines is found in the *Federal Register* 54 (18): 3094-3916, January 26, 1989.

General

Employers are advised and encouraged to institute and maintain in their establishments a program that provides adequate systematic policies, procedures, and practices that protect their employees from, and allow them to recognize, job-related health and safety hazards.

An effective program includes provisions for the systematic identification, evaluation, and prevention or control of general workplace hazards, specific job hazards, and potential hazards that may arise from foreseeable conditions.

Although compliance with the law, including specific OSHA standards, is an important objective, an effective policy should address all hazards. It seeks to prevent injuries and illnesses, whether or not compliance is at issue.

The extent to which the program is described in writing is less important than how effective it is in practice. As the size of a worksite or the complexity of a hazardous operation increases, however, the need for written guidance increases to ensure clear communication of policies and priorities as well as a consistent and fair application of rules.

Major Elements

An effective occupational health and safety program will include the following four main elements: management commitment and employee involvement, worksite analysis, hazard prevention and control, and health and safety training.

1. Management Commitment and Employee Involvement

The elements of management commitment and employee involvement are complementary and form the core of any occupational health and safety program. Management's commitment provides the motivating force and the resources for organizing and controlling activities within an organization. In an effective program, management regards worker health and safety as a fundamental value of the organization and applies its commitment to health and safety protection with as much vigor as to other organizational goals.

Employee involvement provides the means by which workers develop and/or express their own commitment to health and safety protection for themselves and for their fellow workers.

In implementing a health and safety program, there are various ways to provide commitment and support by management and employees. Some recommended actions are described briefly as follows:

- State clearly a worksite policy on safe and healthful work and working conditions so that all personnel with responsibility at the site (and personnel at other locations with responsibility for the site) fully understand the priority and importance of health and safety protection in the organization.
- Establish and communicate a clear goal for the health and safety program and define objectives for meeting that goal so that all members of the organization understand the results desired and the measures planned for achieving them.
- Provide visible top management involvement in implementing the program so that all employees understand that management's commitment is serious.
- Arrange for and encourage employee involvement in the structure and operation of the program and in decisions that affect their health and safety so they will commit their insight and energy to achieving the health and safety program's goals and objectives.
- Assign and communicate responsibility for all aspects of the program so that managers, supervisors, and employees in all parts of the organization know what performance is expected of them.
- Provide adequate authority and resources to responsible parties so that assigned responsibilities can be met.
- Hold managers, supervisors, and employees accountable for meeting their responsibilities so that essential tasks will be performed.
- Review program operations at least annually to evaluate their success in meeting the goals and objectives, so that deficiencies can be identified and the program and/or the objectives can be revised when they do not meet the goal of effective health and safety protection.

2. Worksite Analysis

A practical analysis of the work environment involves a variety of worksite examinations to identify existing hazards and conditions and operations in which changes might occur to create new hazards. Unawareness of a hazard stemming from failure to examine the worksite is a sign that health and safety policies and/or practices are ineffective. Effective management actively analyzes the work and worksite to anticipate and prevent harmful occurrences. So that all hazards and potential hazards are identified, the following measures are recommended:

- Conduct comprehensive baseline worksite surveys for health and safety and periodic comprehensive update surveys and involve employees in this effort.
- Analyze planned and new facilities, processes, materials, and equipment.
- Perform routine job hazard analyses.
- Conduct regular site health and safety inspections so that new or previously missed hazards and failures in hazard controls are identified.
- Assess risk factors of ergonomic applications to workers' tasks.
- Provide a reliable system for employees to notify management personnel about conditions that appear hazardous and to receive timely and appropriate responses and encourage employees to use the system without fear or reprisal. This system utilizes employee insight and experience in health and safety protection and allows employee concerns to be addressed.
- Investigate accidents and "near miss" incidents so that their causes and means for their prevention can be identified.
- Analyze injury and illness trends over time so that patterns with common causes can be identified and prevented.
- Use OSHA's Computer-Disk, Read-Only-Memory (CD-ROM)[2], to review case studies that might be pertinent to worksite analyses and hazard identification.

[2] OSHA's CD-ROM contains various data on standards, directives, and variances. Order from the U.S. Government Printing Office, Superintendent of Documents, Washington, DC 20402-9325, (202) 783-3238, Fax (202) 512-2250. Order No. 729-013-00000-5, $88 per year (quarterly updates), or $28 per single disk.

3. Hazard Prevention and Control

Where feasible, workplace hazards are prevented by effective design of the job site or job. Where it is not feasible to eliminate such hazards, they must be controlled to prevent unsafe and unhealthful exposure. Elimination or control must be accomplished in a timely manner once a hazard or potential hazard is recognized. Specifically, as part of the program, employers should establish procedures to correct or control present or potential hazards in a timely manner. These procedures should include measures such as the following:

- Use engineering techniques where feasible and appropriate.
- Establish, at the earliest time, safe work practices and procedures that are understood and followed by all affected parties. Understanding and compliance are a result of

training, positive reinforcement, correction of unsafe performance, and if necessary, enforcement through a clearly communicated disciplinary system.

- Provide personal protective equipment when engineering controls are not feasible.
- Use administrative controls, such as reducing the duration of exposure.
- Maintain the facility and equipment to prevent equipment breakdowns.
- Plan and prepare for emergencies, and conduct training and emergency drills, as needed, to ensure that proper responses to emergencies will be "second nature" for all persons involved.
- Establish a medical program that includes first aid onsite as well as nearby physician and emergency medical care to reduce the risk of any injury or illness that occurs.

4. Health and Safety Training

Training is an essential component of an effective health and safety program. Training helps identify the health and safety responsibilities of both management and employees at the site. Training is often most effective when incorporated into other education on performance requirements and job practices. The complexity of training depends on the size and complexity of the worksite as well as the characteristics of the hazards and potential hazards at the site.

Employee Training

Employee training programs should be designed to ensure that all employees understand and are aware of the hazards to which they may be exposed and the proper methods for avoiding such hazards.

Supervisory Training

Supervisors should be trained to understand the key role they play in job site safety and to enable them to carry out their health and safety responsibilities effectively. Training programs for supervisors should include the following objectives:

- Analyze the work under their supervision to anticipate and identify potential hazards.
- Maintain physical protection in their work areas.
- Reinforce employee training on the nature of potential hazards in their work and on needed protective measures through continual performance feedback and, if necessary, through enforcement of safe work practices.
- Understanding their health and safety responsibilities.

Employee Training for Health and Safety

Many standards promulgated by OSHA explicitly require the employer to train employees in the health and safety aspects of their jobs. Other OSHA standards make it the employer's responsibility to limit certain job assignments to employees who are "certified," "competent," or "qualified," meaning that they have had special previous training. This should be an essential part of every employer's program for protecting workers from accidents and illnesses. Many researchers conclude that those who are new on the job have a higher rate of accidents and injuries than more experienced workers. This may be due to ignorance of specific job hazards and/or of proper work practices, and if so, training may help provide a solution.

It is good safety and business practice for employers to keep records of all health and safety training. Records can provide evidence of the employer's good faith and compliance with OSHA standards. Documentation can also supply an answer to one of the first questions an accident investigator will ask: "Was the injured employee properly trained to do the job?"

Training in the proper performance of a job is time and money well spent, and the employer should regard it as an investment rather than an expense. An effective program of health and safety training for workers can result in fewer accidents and illnesses, improved morale, lower insurance premiums, and reduced liability, among other benefits.

The Onsite Consultation Program

The onsite health and safety consultation program is available in all states to employers who want help in recognizing and correcting health and safety hazards in their workplaces through free onsite consultation services funded by OSHA. The service is performed by state governments using well-trained professional staffs.

The onsite consultation program is one of the several that OSHA designed to assist employers in voluntarily fulfilling their responsibilities for workplace health and safety.

Primarily targeted for smaller businesses, the onsite consultation program is completely separate from the OSHA inspection effort. No citations are issued or penalties proposed for any safety or health problems found in your workplace. The service is confidential. Your name, your firm's name, and any information you provide about your workplace, plus any unsafe or unhealthful working conditions that the consultant uncovers, will not be reported routinely to the OSHA inspection staff.

The only obligation is your commitment to correcting, in a timely manner, serious job health and safety hazards. As an employer, you will be asked to make this commitment prior to the actual visit.

The onsite consultants perform the following services:

- Help recognize hazards in the workplace.
- Suggest general approaches or options for solving a safety or health problem.
- Assist the employer in developing or maintaining an effective health and safety program.
- Identify the kinds of help available if further assistance is needed.
- Offer training and education for the employer and employees at the workplace.
- Provide the employer with a written report summarizing findings.
- Under specified circumstances, recommend the employer for recognition by OSHA and a 1-year exclusion from general schedule enforcement inspections.

The onsite consultants will not:

- Issue citations or propose penalties for violations of OSHA standards.
- Report possible violations to OSHA enforcement staff.
- Guarantee that the employer's workplace will "pass" an OSHA inspection.

For more information on consultation programs and other sources of help, *contact TOSHA at (800)249-8510*.

GENERAL INDUSTRY STANDARDS

Abrasive Blasting

Blast cleaning nozzles shall be equipped with an operating valve which must be held open manually (deadman or positive-pressure control). A support shall be provided on which the nozzle may be mounted when not in use. *1910.244(b)*

Blast-cleaning enclosures shall be exhaust ventilated in such a way that a continuous inward flow of air will be maintained at all openings in the enclosure during the blasting operation. *1910.94(a)(3)*

Abrasive Grinding

Abrasive wheel machinery and portable power tools shall be used only on machines provided with safety guards with the following exceptions:

- Wheels used for internal work while within the work being ground;
- Mounted wheels, used in portable operations, 2 inches (5 centimeters) and smaller in diameter; and
- Type 16, 17, 18, 18R, and 19 cones, plugs, and threaded hole pot balls where the work offers protection. *1910.215(a)(1) & 1910.243(c)*

Abrasive wheel machinery and portable power tool safety guards shall cover the spindle end, nut, and flange projections, except:

- Safety guards on all operations where the work provides a suitable measure of protection to the operator may be so constructed that the spindle end, nut, and outer flange are exposed;
- Where the nature of the work is such as to entirely cover the side of the wheel, the side covers of the guard may be omitted; and
- The spindle end, nut, and outer flange may be exposed on machines designed as portable saws. *1910.215(a)(2) & 1910.243(c)*

Work rests shall be adjusted so that they are no more than 1/8 inch (3.2 millimeters) from the abrasive wheel. *1910.215(a)(4)*

Abrasive wheel safety guards for bench and floor stands and for cylindrical grinders shall not expose the grinding wheel periphery for more than 65 degrees above the horizontal plane of the wheel spindle. The protecting member shall be adjustable for variations in wheel size so that the distance between the wheel periphery and adjustable tongue (tongue guard) or end of the peripheral member at the top shall never exceed 1/4 inch (6 millimeters). *1910.215(b)(3) & (4)*

Machines designed for a fixed location shall be securely anchored to prevent movement, or designed in such a manner that in normal operation they will not move. *1910.212(b)*

Accident Recordkeeping Requirements

Each employer shall maintain in each establishment a log and summary (OSHA Form No. 200 or equivalent) of all recordable injuries and illnesses (resulting in a fatality, hospitalization, lost workdays, medical treatment, job transfer or termination, or loss of consciousness) for that establishment, and enter each recordable event no later than 6 working days after receiving the information. Where the complete log and summary records are maintained at a place other than the establishment, a copy of the log that reflects the injury and illness experience of the establishment complete and current to date within 45 calendar days, must be available at the original site. *1904.2(a) & (b)(2)*

In addition to the log of occupational injuries and illnesses, each employer shall have available for inspection at each establishment within 6 working days after notification of a recordable case, a supplementary record (OSHA Form No. 301 or equivalent) for each occupational injury or illness for that establishment. *1904.4*

Each employer shall post an annual summary of occupational injuries and illnesses for each establishment, compiled from the collected OSHA Form No. 200, and including the year's totals, calendar year covered, company name, establishment, name and address, certification signature, title, and date. An OSHA Form No. 200 shall be used in presenting the summary. The summary shall be posted by February 1 of each year and shall remain in place until March 1 of the same year. *1904.5*

The log and summary, the supplementary record, and the annual summary shall be retained in each establishment for 5 years following the end of the year to which they relate. Records shall be made available, as authorized, upon request. *1904.6(a) & (b) & 1904.7(a) & (b)*

Note: Certain establishments classified as retail trades, finance, insurance, real estate, and services may be exempt from the requirement for maintaining records relating to occupational illness and injuries. (See 29 CFR 1904.16, Establishments Classified in Standard Industrial Classification Codes 52-89, except 52-54, 70, 75, 76, 79, and 80).

Accident Reporting Requirements

Within 48 hours after its occurrence, an employment accident that is fatal to one or more employees or that results in the hospitalization of five or more employees shall be reported by the employer, either orally or in writing, to the nearest OSHA Area Office. *1904.8*

Air Receivers

All new air receivers installed, shall be designed and constructed to meet the standards of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code*, Section VII, 1968. *1910.169(a)(2)*

A drain pipe and valve shall be installed for the removal of accumulated oil and water. *1910.169(b)(2)*

Indicating gauges and safety valves shall be installed and tested frequently. *1910.169(b)(3)(i) & (iv)*

Aisles and Passageways

Where mechanical handling equipment is used, sufficient safe clearance shall be allowed for aisles, at loading docks, through doorways, and wherever turns or passage must be made. Aisles and passageways used by mechanical equipment shall be kept clear and in good repair with no obstruction across or in aisles that could create hazards. *1910.22(b)(1) & 1910.176(a)*

Permanent aisles and passageways shall be appropriately marked. *1910.22(b)(2) & 1910.176(a)*

Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, and ditches. *1910.22(c)*

Asbestos

The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.2 fibers per cubic centimeter of air (0.2 f/cc) as an 8-hour time-weighted average (TWA). *1910.1001(c)(1)*

The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1 f/cc as averaged over a sampling period of 30 minutes. *1910.1001(c)(2)*

To help reduce worker exposure to airborne fibers, asbestos must be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state. This "wet" method also must be used when products containing asbestos are removed from bags, cartons, or containers. If this is not possible, removal must be done in an enclosed or well-ventilated area. *1910.1001(f)(1)(vi) & (vii)*

Respirators must be used (1) while feasible engineering and work practice controls are being installed or implemented; (2) during maintenance and repair activities or other activities where engineering and work practice controls are not feasible; (3) if feasible engineering and work practice controls are insufficient to reduce employee exposure; and (4) in emergencies. *1910.1001(g)(1)*

Belt Sanding Machines

Belt sanding machines used for woodworking shall be provided with guards at each nip point where the sanding belt runs onto a pulley, and the unused run of the sanding belt shall be shielded to prevent accidental contact. *1910.213(p)(4)*

Bloodborne Pathogens

Each employer having employee(s) who may incur skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials as a result of performing their professional duties shall establish a written exposure control plan designed to eliminate or minimize exposure. *1910.1030(c)(1)(i)*

Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious. *1910.1030(d)(1)*

Engineering and work practice controls shall be used to eliminate or minimize employee exposure. Where occupational exposure remains after instituting engineering and work practice controls, personal protective equipment shall also be used. *1910.1030(d)(2)(i)*

Boilers

Boiler design, construction, and inspection is referenced in the ASME Boiler and Pressure Vessel Code, 1968 and current. *1910.106(b) & 1910.217(b)(12) & 1910.261(a)(3) & OSHA Technical Manual CPL 2-2.0B, Change 10, (Pressure Vessel Guidelines)*

Cadmium

The standard establishes a single 8-hour, TWA permissible exposure limit (PEL) of 5 micrograms per cubic meter of air (5 ug/m-cubed) and an action level of 2.5 ug/m-cubed for all industries. The PEL applies to all cadmium compounds and does not differentiate between exposure to cadmium fumes or dust. *1910.1027(b) & (c)*

In six major cadmium industries covered by the general industry standard (nickel-cadmium batteries, cadmium/zinc refining, lead smelting, pigments, plating, plastics), OSHA determined that it was not technologically or economically feasible to engineer to a TWA PEL of 5 ug/m-cubed. A separate engineering control air limit (SECAL) of either 15 ug/m-cubed or 50 ug/m-cubed was established for these industries. *1910.1027(f)(1)(ii)*

Employers must institute medical surveillance programs for all employees who, for 30 or more days per year, are exposed at or above the action level. Medical surveillance also is required for all employees who, although not currently exposed at or above the action level, have been exposed to cadmium prior to this standard by the employer for an aggregate period of more than 60 months. *1910.1027(1)(1)(A) & (B)*

Chains, Cables, Ropes, and Hooks

Hooks and chains shall be visually inspected daily and monthly with a full, written, dated, and signed report of condition kept on file and be readily available to appointed personnel. Running ropes shall be inspected monthly and a written report of condition kept on file and be readily available to appointed personnel. *1910.179(j)(2) & (m)(1)*

Hoist ropes on crawler, locomotive, and truck cranes shall be free from kinks or twists and shall not be wrapped around the load. *1910.180(h)(2)*

All U-bolt rope clips on hoist ropes on overhead and gantry cranes shall be installed so that the U-bolt is in contact with the dead end (short or nonload carrying end) of the rope. Clips shall be installed in accordance with the clip manufacturer's recommendation. All nuts on newly installed clips shall be tightened after 1 hour of use. *1910.179(h)(2)(v)*

Chemical Information (See Hazard Communication or Specific Chemical Term)

Compressed Air, Use of

Compressed air used for cleaning purposes shall not exceed 30 pounds (13.5 kilograms) per square inch (6.5 square centimeters) when the nozzle end is obstructed or dead-ended, and then only with effective chip guarding and personal protective equipment. *1910.242(b)*

Compressed Gas Cylinders

Compressed gas cylinders shall be kept away from excessive heat, shall not be stored where they might be damaged or knocked over by passing or falling objects and shall be stored at least 20 feet (6 meters) away from highly combustible materials. *1910.252(b)(2)(ii)*

Where a cylinder is designed to accept a valve protection cap, caps shall be in place except when the cylinder is in use or is connected for use. *1910.253(b)(2)(iv)*

Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location at least 20 feet (6 meters) from highly combustible materials such as oil or excelsior. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards. *1910.253(b)(2)(ii)*

Also, the in-plant handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tank cars, or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association pamphlet P-1-1965.

Compressed Gases

Acetylene
Acetylene cylinders shall be stored and used in a vertical, valve-end-up position only. *1910.253(b)(3)(ii)*

Under no conditions shall acetylene be generated, piped (except in approved cylinder manifolds) or utilized at a pressure in excess of 15 pounds per square inch (psi) (103 kPa gauge pressure) or 30 psi (206 kPa absolute). The use of liquid acetylene is prohibited.
1910.253(a)(2)

The in-plant transfer, handling, and storage of acetylene in cylinders shall be in accordance with Compressed Gas Association pamphlet G-1.3-1959. *1910.102(a)*

Hydrogen
Hydrogen containers shall comply with one of the following: (1) designed, constructed, and tested in accordance with appropriate requirements of ASME Boiler and Pressure Vessel Code, Section VIII----Unfired Pressure Vessels----1968; or (2) designed, constructed, tested and maintained in accordance with U.S. Department of Transportation specifications and regulations. *1910.103(b)(1)(i)(a)(1) & (2)*

Hydrogen systems shall be located so that they are readily accessible to delivery equipment and to authorized personnel, shall be located above ground, and shall not be located beneath electric power lines. Systems shall not be located close to flammable liquid piping or piping of other flammable gases. *1910.103(b)(2)(a) through (d)*

Permanently installed containers shall be provided with substantial noncombustible supports on firm noncombustible foundations. *1910.103(b)(2)(b)*

Nitrous Oxide
The piped systems for the in-plant transfer and distribution of nitrous oxide shall be designed, installed, maintained, and operated in accordance with Compressed Gas Association pamphlet G-8.1-1964. *1910.105*

Oxygen
Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum distance of 20 feet (6 meters) or by a noncombustible barrier at least 5 feet high (1.5 meters) having fire resistance rating of 1/2 hour. *1910.253(b)(4)(iii)*

Control of Hazardous Energy (Lockout/Tagout)

Whenever service or maintenance is performed on machines and equipment, it must be done with the machine or equipment stopped and isolated from all sources of energy. The energy-isolating device(s) for that machine or equipment must be locked out or tagged out in accordance with a documented procedure. Employees involved in the energy control program must be given training. Periodic inspections of the use of the procedures must be conducted at least annually to ensure the continued effectiveness of the program. The periodic inspection must include a review of the procedures with all employees who are authorized to use the procedures when lockout is used, and with all authorized and affected employees when tagout is used. When outside contractors are performing servicing or maintenance within a plant or facility, each employer must coordinate with the other employers to ensure that no employees are endangered. When a group of employees are performing a servicing or maintenance activity, each employee must be afforded protection equivalent to the utilization of individual lockout or tagout. When servicing or maintenance extends over more than one shift, specific procedures shall be utilized to ensure continuity of personnel protection, including provision for the orderly transfer of lockout tagout control. This must be done to minimize exposure to hazards from unexpected energizing, startup of the machine or equipment, or the release of stored or residual energy. *1910.147*

Cranes (Overhead and Mobile), Hoists, and Derricks

All functional operating mechanisms, air and hydraulic systems, chains, ropes, slings, hooks, and other lifting equipment shall be visually inspected daily (frequent inspections). *1910.179(j)(2) & 1910.180(d)(3) & 1910.184(d)(2)*

Complete inspection of the crane shall be performed at 1 month to 12 month intervals (periodic inspections depending on its activity, severity of service, and environmental conditions. The inspection shall include the following areas: deformed, cracked, corroded, worn, or loose members or parts; the brake system; limit indicators (wind, load); power plant, and electrical apparatus. *1910.179(j)(3) & 1910.180(d)(4) & 1910.181(d)(3)*

Unsafe conditions disclosed by the inspection requirements shall be corrected before the operation is resumed and the crane shall not be operated until all guards have been reinstalled. *1910.179(1)(3) & 1910.180(f) & 1910.181(e)(3)*

Overhead cranes shall have stops at the limit of travel of the trolley. Bridge and trolley bumpers or equivalent automatic devices shall be provided. Bridge trucks shall have tail sweeps. *1910.179(e)(1) through (4)*

The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block, and this marking shall be clearly legible from the ground or floor. *1910.179(b)(5)*

Pendant control boxes shall be clearly marked for identification of functions. *1910.179(g)(1)(v)*

There shall be no hoisting, lowering, or traveling while any employee is on the load or hook. *1910.179(n)(3)(v) & 1910.180(h)(3)(v) & 1910.181(i)(3)(v)*

Dip Tanks Containing Flammable or Combustible Liquid

Dip tanks with more than 150 gallons (570 liters) capacity, or 10 square feet (0.9 square meters) in liquid surface area, shall be equipped with a properly trapped overflow pipe leading to a safe location outside the building. *1910.108(c)(2)*

There shall be no open flames, spark producing devices, or heated surfaces having a temperature sufficient to ignite vapors in any vapor area. *1910.108(e)(1)*

Areas in the vicinity of dip tanks shall be kept as clear of combustible stock as practical and shall be kept entirely free of combustible debris. *1910.108(f)(1)*

All dip tanks exceeding 150 gallons (570 liters) liquid capacity or having a liquid surface area exceeding 4 square feet (.36 square meters) shall be protected with at least one of the following automatic extinguishing facilities: water spray system, foam system, carbon dioxide system, dry chemical system, or automatic dip tank cover. This provision shall apply to hardening and tempering tanks having a liquid surface area of 25 square feet (2.25 square meters) or more or a capacity of 500 gallons (1,900 liters) or more. *1910.108(c)(5) & (h)(1)(v)*

Dockboards

Dockboards shall be strong enough to carry the load imposed on them. *1910.30(a)(1)*

Portable dockboards shall be anchored or equipped with devices that will prevent their slipping. *1910.30(a)(2)*

Dockboards shall have hand holds or other effective means to allow safe handling. *1910.30(a)(4)*

Positive means shall be provided to prevent railroad cars from being moved while dockboards are in position. *1910.30(a)(5)*

Drinking Water

Potable water shall be provided in all places of employment. *1910.141(b)(1)(i)*

Potable drinking water dispensers shall be designed, constructed, and serviced to ensure sanitary conditions, shall be capable of being closed, and shall have a tap. *1910.141(b)(1)(iii)*

Electrical

Electrical equipment shall be free from recognized hazards that are likely to cause death or serious physical harm to employees. *1910.303(b)(1)*

Flexible Cords and Cables (Extension Cords)
Flexible cords and cables shall be protected from accidental damage. *1910.305(a)(2)(iii)(G)*

Unless specifically permitted, flexible cords and cables may not be used as a substitute for the fixed wiring of a structure, where attached to building surfaces, where concealed or where run through holes in walls, ceilings, or floors, or where run through doorways, windows, or similar openings. Flexible cords shall be connected to devices and fittings so that strain relief is provided that will prevent pull from being directly transmitted to joints or terminal screws. *1910.305(g)(2)(iii)*

Grounding/Grounded
For a grounded system, a grounding electrode conductor shall be used to connect both the equipment grounding conductor and the grounded circuit conductor to the grounding electrode. Both the equipment grounding conductor and the grounding electrode conductor shall be connected to the grounded circuit conductor on the supply side of the service disconnecting means or overcurrent devices if the system is separately derived. *1910.304(f)(3)(i)*

For an ungrounded service-supplied system, the equipment grounding conductor shall be connected to the grounding electrode conductor at the service equipment. *1910.304(f)(3)(ii)*

The path to ground from circuits, equipment, and enclosures shall be permanent and continuous. *1910.304(f)(4)*

Guarding
Electrical equipment shall be free from recognized hazards that are likely to cause death or serious physical harm to employees. *1910.303(b)(1)*

Identification
Each disconnecting means shall be legibly marked to indicate its purpose, unless it is located so the purpose is evident. *1910.303(f)*

Listing and Labeling
Listed or labeled equipment shall be used or installed in accordance with any instructions included in the listing or labeling. *1910.303(b)(2)*

Openings
Unused openings in cabinets, boxes, and fittings shall be effectively closed. *1910.305(b)(1)*

Safety-Related Work Practices
Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment of circuits that are or may be energized. *1910.333(a)*

Electrical safety-related work practices cover both qualified persons (those who have training in avoiding the electrical hazards of working on or near exposed energized parts) and unqualified persons (those with little or no such training). *1910.331(a)*

There must be written lockout and/or tagout procedures (This may be a copy of 1910.333(b)(2)). *1910.333(b)(2)(i)*

Overhead power lines must be deenergized and grounded by the owner or operator of the lines, or other protective measures must be provided before work is started. Protective measures, such as guarding or insulating the lines, must be designed to prevent employees from contacting the lines. *1910.333(c)(3)*

Unqualified employees and mechanical equipment must be at least 10 feet (3 meters) away from overhead power lines of 50kV and below. If the voltage exceeds 50kV, the clearance distance should be increased by 4 inches (6.6 centimeters) for each additional 10kV over 50kV. *1910.333(c)(3)(i) & (iii)*

OSHA requires portable ladders to have nonconductive side rails if used by employees who would be working where they might contact exposed energized circuit parts. *1910.333(c)(3)(iii)(7)*

Splices

Conductors shall be spliced or joined with devices identified for such use or by brazing, welding, or soldering with a fusible alloy or metal. All splices, joints, and free ends of conductors shall be covered with an insulation equivalent to that of the conductor or with an insulating device suitable for the purpose. *1910.303(c)*

Emergency Action Plans

An emergency action plan to ensure employee safety in the event of fire and other emergencies shall be prepared in writing and reviewed with affected employees. The plan shall include the following elements: escape procedures and routes, critical plant operations, employee accounting following an emergency evacuation, rescue and medical duties, means of reporting emergencies, and persons to be contacted for information or clarification. *1910.38(a) & (b)(2)(i) through (iii) & 1910.120(q)*

Employers should apprise employees of the fire hazards of the materials and processes to which they are exposed. *1910.38(b)(4) & 1910.120(q)*

Emergency Flushing, Eyes and Body

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use. *1910.151(c)*

Ergonomics (See General Duty Clause)

An ergonomic hazard may be caused or aggravated by repetitive motions, forceful exertions, vibration, sustained or awkward positioning or mechanical compression of the hand, wrist, arm, back, neck, shoulder, and leg over extended periods or from other ergonomic stressors.

Exits

Every building designed for human occupancy shall be provided with exits sufficient to permit the prompt escape of occupants in case of emergency. *1910.36(b)(1)*

In hazardous areas, or where employees may be endangered by the blocking of any single means of egress due to fire or smoke, there shall be at least two means of egress remote from each other. *1910.36(b)(3) & (8)*

Exits and the way of approach and travel from exits shall be maintained so that they are unobstructed and are accessible at all times. *1910.36(d)(1), 1910.37(f)(1) & (k)(2)*

All exits shall discharge directly to the street or other open space that gives safe access to a public way. *1910.37(h)(1)*

Exit doors serving more than 50 people, or at high-hazard areas, shall swing in the direction of exit travel. *1910.37(f)(2)*

Exits shall be marked by readily visible, suitably illuminated exit signs. Exit signs shall be distinctive in color and provide contrast with surroundings. The word "EXIT" shall be of plainly legible letters, not less than 6 inches (15 centimeters) high. *1910.37(g)(1), (4), & (8)*

Any door, passage, or stairway that is neither an exit nor a way of exit access and that is so located or arranged as to be likely to be mistaken for an exit, shall be identified by a sign reading "Not an Exit" or similar designation. *1910.37(q)(2)*

Explosives and Blasting Agents

All explosives shall be kept in approved magazines. *1910.109(c)(10)(i)*

Stored packages of explosives shall be laid flat with top side up. Black powder, when stored in magazines with other explosives, shall be stored separately. *1910.109(c)(5)(i)*

Smoking, matches, open flames, spark-producing devices, and firearms (except firearms carried by guards) shall not be permitted inside of or within 50 feet (15 meters) of magazines. The land surrounding a magazine shall be kept clear of all combustible materials for a distance of at least 25 feet (7.5 meters). Combustible materials shall not be stored within 50 feet (15 meters) of magazines. The manufacture of explosives and pyrotechnics shall meet the requirements of OSHA's *Process Safety Management* standard. *1910.109(k)(2) & (3)*

Extension Cords (See Electrical, Flexible Cords, and Cables)

Eye and Face Protection

Protective eye and face equipment shall be required, used, and maintained in a sanitary and reliable condition, as necessary to protect employees from workplace hazards. *1910.133(a)(1)*

Eye and face protection equipment shall be in compliance with ANSI Z87.1-1968 (or a standard that is equally effective for eye and face protection, i.e. ANSI Z87.1-1989) and is in compliance with OSHA 1910.133. *1910.133(a)(6)*

Eyewash/Drench Shower

Suitable facilities for quick drenching or flushing of the eyes and body shall be provided if there is a possibility that an employee might be exposed to injurious, corrosive materials. *1910.151(c)*

Fan Blades

When the periphery of the blades of a fan is less than 7 feet (2.1 meters) above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than 1/2 inch (12.5 millimeters) *1910.212(a)(5)*

Fire Protection

Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer also shall provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting. *1910.157(e)(3)*

If portable fire extinguishers are provided for employee use, the employer shall mount, locate, and identify them so they are readily accessible to employees without subjecting the employees to possible injury. These fire extinguishers shall be maintained in a fully charged and operable condition and kept in their designated places at all times except during use. *1910.157(c)(1) & (4)*

Portable fire extinguishers shall be given maintenance service at least once a year and a written record kept to show the maintenance or recharge date. A record shall be maintained of the service. *1910.157(c)(1)*

Flammable Liquids

Flammable liquids shall be kept in covered containers or tanks when not actually in use. 1910.106(e)(2)(iv)

Flammable and combustible liquids shall be drawn from or transferred into containers within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or by gravity through an approved self-closing valve. Transferring by means of air pressure shall be prohibited. *1910.106(e)(2)(iv)(d)*

Not more than 60 gallons (228 liters) of Class I or Class II liquids, nor more than 120 gallons (456 liters) of Class III liquids may be stored in a storage cabinet. *1910.106(d)(3)(i)*

Inside storage rooms for flammable and combustible liquids shall be constructed to meet the required fire-resistive rating and wiring for their uses. *1910.106(d)(4)(i) & (iii)*

Outside storage areas shall be graded so as to divert spills away from buildings or other exposures, or be surrounded with curbs at least 6 inches (15 centimeters) high with appropriate drainage to a safe location for accumulated liquids. The areas shall be protected against tampering or trespassing, where necessary, and shall be kept from weeds, debris, and other combustible material not necessary to the storage. *1910.106(d)(6)(iii) & (iv)*

Adequate precautions shall be taken to prevent the ignition of flammable vapors. Sources of ignition include, but are not limited to, open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, static, electrical and mechanical sparks, spontaneous ignition, including heat-producing chemical reactions, and radiant heat. *1910.106(e)(6)(i)*

Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected. *1910.106(e)(6)(ii)*

Floors, General Conditions

All floor surfaces shall be kept clean, dry, and free from protruding nails, splinters, loose boards, holes, or projections. *1910.22(a)(1) through (3)*

Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats, or other dry standing places shall be provided where practicable. *1910.22(a)(2)*

Floor Loading Limit

In every building or other structure, or part thereof, used for mercantile, business, industrial, or storage purposes, the loads approved by the building official shall be marked on plates of approved design that shall be supplied and securely affixed by the owner of the building, or his duly authorized agent, in a conspicuous place in each space to which they relate. Such plates shall not be removed or defaced but, if lost, removed, or defaced, shall be replaced by the owner or his agent. *1910.22(d)(1)*

Floor Openings and Open Sides

Every stairway and ladderway floor opening shall be guarded by standard railings with standard toeboards on all exposed sides except at the entrance. For infrequently used stairways, the guard may consist of a hinged cover and removable standard railings. The entrance to ladderway openings shall be guarded to prevent a person walking directly into the opening. *1910.23(a)(1) & (2)*

Every hatchway and chute floor opening shall be guarded by a hinged floor opening cover equipped with standard railings to leave only one exposed side or a removable railing with toeboard on not more than two sides and a fixed standard railing with toeboards on all other exposed sides. *1910.23(a)(3)*

Every floor hole into which persons can accidentally walk shall be guarded by either a standard railing with standard toeboard on all exposed sides, or a floor hole cover that should be hinged in place. While the cover is not in place, the floor hole shall be attended or shall be protected by a removable standard railing. *1910.23(a)(8)*

Every open-sided floor, platform or runway 4 feet (1.2 meters) or more above adjacent floor or ground level shall be guarded by a standard railing with toeboard on all open sides, except where there is entrance to a ramp, stairway, or fixed ladder. Runways not less than 18 inches (45 centimeters) wide used exclusively for special purposes may have the railing on one side omitted where operating conditions necessitate. *1910.23(c)(1) & (2)*

Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment shall be guarded with a standard railing and toeboard. *1910.23(a)(3)*

Foot Protection

Foot protection equipment shall be worn when there is reasonable probability that injury can be prevented by such equipment. *1910.132(a)*

Safety-toe footwear shall meet the requirements of ANSI Z41.1-1983, Standard for Men's Safety-Toe Footwear. *1910.136*

Forklift Trucks (Powered Industrial Trucks)

If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition. *1910.178(p)(1)*

High-lift rider trucks shall be equipped with substantial overhead guards unless operating conditions do not permit. *1910.178(e)(1)*

Fork trucks shall be equipped with vertical-load backrest extensions when the types of loads present a hazard to the operators. *1910.178(e)(2)*

The brakes of trucks shall be set and wheel chocks placed under the rear wheels to prevent the movement of trucks, trailers, or railroad cars while loading or unloading. *1910.178(m)(7)*

Only a trained and authorized operator shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks. *1910.178(1)*

Formaldehyde

Employee exposure to formaldehyde shall be limited to 0.75 parts per million (ppm) as an 8-hour TWA; a 2 ppm 15-minute short-term exposure limit (STEL); and an action level of 5 ppm. *1910.1048(c)(1) & (2)*

A medical surveillance program shall be instituted for any employee whose exposure exceeds the STEL or action level. Medical removal provisions with economic, seniority, and benefits protection may supplement medical surveillance programs, where necessary. *1910.1048(1)(1)(i) & (1)(8)(vi) through (viii)*

Hazard warning labels are required for all forms of formaldehyde, including solutions and mixtures composed of 0.1 percent or greater of formaldehyde and materials capable of releasing the substance in concentrations of 0.1 ppm or higher. Comprehensive labels must include warnings of potential carcinogenic effects where concentrations may exceed 0.5 ppm. *1910.1048(m)(1)(i) & (m)(3)(iii)*

The employer shall conduct training at the time of employees' initial assignment and annually thereafter for all employees exposed to a formaldehyde concentration of 0.1 ppm or higher. Such training is required to increase employees' awareness of formaldehyde hazards in their workplace and the control methods employed as well as an awareness of the signs and symptoms of health effects related to formaldehyde exposure. *1910.1048(n)(1) through (3)*

General Duty Clause (PL 91-596)

Hazardous conditions or practices not covered in an OSHA standard may be covered under Section 5(a)(1) of the Act, which states: "Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

Hand Tools

Portable electric equipment shall be handled in a manner that will not cause damage. When the cord and plug connected tools are relocated they should be visually inspected before use. *1910.334(a)(2)*

Each employer shall be responsible for the safe condition of tools and equipment used by employees, including tools and equipment which may be furnished by employees. *1910.242(a)*

The frames of portable electrical tools and equipment, except when UL-approved double-insulated construction, shall be properly grounded. *1910.304(f)(5)(v)*

All hand tools shall be kept in safe condition. Handles of tools shall be kept tight in the tool and wooden handles shall be free of splinters or cracks. Wedges and chisels shall be free of mushroomed heads. Wrenches shall not be used when sprung to the point that slippage occurs. *1910.266(c)(2)(i) through (iv)*

All non-current-carrying metal parts of portable equipment and fixed equipment including their associated fences, housings, enclosures, and supporting structures shall be grounded. *1910.304(f)(7)(iii)*

Hazard Communication

The purpose of this standard is to ensure that the hazards of all chemicals produced or imported are evaluated and that information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets, and employee training. *1910.1200(a)(1)*

Employers shall develop, implement, and maintain at the workplace a written hazard communication program for their workplaces. Employers must inform their employees of the availability of the program, including the required list(s) of hazardous chemicals and material safety data sheets. *1910.1200(e)(1)(i) & (ii)*

The employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged, or marked with the identity of the hazardous chemical(s) contained there in and must show hazard warnings appropriate for employee protection. *1910.1200(f)(1)(i) & (ii)*

Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet for each hazardous chemical that they use and shall ensure that they are readily accessible to employees when they are in their work area. *1910.1200(g)(8)*

Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released); the physical and health hazards of the chemicals in the work area; the measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and the details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information. *1910.1200(h)(2)(i) through (iv)*

Hazardous Waste Operations (Emergency Response)

Any information concerning the chemical, physical, and toxicological properties of each substance known or expected to be present on site that is available to the employer and relevant to the duties an employee is expected to perform shall be made available to the affected employees prior to the commencement of their work activities. The employer may utilize information developed for the hazard communication standard for this purpose. *1910.120(c)(8)*

An emergency response plan is required for all potential emergencies involving hazardous substances. This includes plant emergencies involving those substances to which employees are expected to respond. *1910.120(q)*

Training is required for all employees who work at hazardous waste cleanup sites, treatment storage and disposal (TSD) sites (Environmental Protection Agency permitted sites), and who respond to any emergencies involving hazardous substances. Training must cover the necessary information to perform these jobs safely including information on the proper personal protective equipment and procedures to safeguard employees against hazards and effects of exposure to toxic substances. *1910.120(e)*

A health and safety program that delineates responsibilities and methods for assuring employee safety is necessary for employees engaged in hazardous waste cleanup or TSD activities. *1910.120(b)(1) & (p)(1)*

Medical surveillance (physical examination) is required for employees dealing with hazardous waste, TSD, and hazardous materials. It is used to monitor employees for adverse exposure to harmful substances. *1910.120(f)*

Personal protective equipment must be selected and used to protect employees from hazardous substances and physical hazards. *1910.120(g)(3)*

When necessary, a decontamination procedure must be used to assure that hazardous substances are removed from workers before they leave the worksite as well as from equipment that is to be taken off site. *1910.120(k)(1) & (2)*

Head Protection

Head protection equipment (helmets) shall be worn when there is a possible danger of head injuries from impact, flying or falling objects, or electrical shock and burns. *1910.132(a)(1) & (c)*

Employees shall wear nonconductive head protection wherever there is a possible danger of head injury from impact electric shock or burns due to contact with exposed energized parts. *1910.335(a)(1)(v)*

Hooks (See Chains, Cables, Ropes, Hooks)

Housekeeping

All places of employment, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition. *1910.22(a)(1) & 1910.141(a)(3)*

Ionizing Radiation

Employers shall be responsible for proper controls to prevent any employee from being exposed to ionizing radiation in excess of acceptable limits. *1910.96(b)(1) & (c)(1)*

Except as provided below, no employer shall possess, use, or transfer sources of ionizing radiation in such a manner as to cause any individual in a restricted area to receive in any period of one calendar quarter from sources in the employer's possession or control a dose in excess of those in the following table:

	Rems[3] per calendar quarter
Whole body: Head and trunk; active blood forming organs; lens of eyes; or gonads	1.25
Hands and forearms; feet and ankles	18.75
Skin of whole body	7.5

[3] Rem is the measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of 1 roentgen (r) of x-rays (1 millirem [mrem] = 0.001 rem). The relation of the rem to other dose units depends on the biological effect under consideration and upon the conditions for irradiation.

Exceptions: An employer may permit an individual in a restricted area to receive doses to the whole body greater than those permitted so long as:

(1) During the calendar quarter the dose to the whole body shall not exceed 3 rems; (2) the dose to the whole body, when added to the accumulated occupational dose to the whole body, shall not exceed 5 (N-18) rems, where "N" equals the individual's age in years at his/her last birthday; and (3) the employer maintains adequate past and current exposure records. *1910.96(b)(2)(ii)*

Each radiation area shall be conspicuously posted with appropriate signs and/or barriers. *1910.96(e)(2)*

Employers shall maintain records of the radiation exposure to all employees for whom personnel monitoring is required. *1910.96(b)(2)(iii) & (n)(1)*

Ladders, Fixed

All rungs shall have a minimum diameter of 3/4 inch (1.8 centimeters), if metal, or 1 1/8 inches (2.8 centimeters), if wood. They shall be a minimum of 16 inches (40 centimeters) wide and should be spaced uniformly no more than 12 inches (30 centimeters) apart. *1910.27(b)(1)(i) through (iii)*

Cages, wells, or ladder safety devices for ladders affixed to towers, water tanks, or chimneys shall be provided on all ladders more than 20 feet (6 meters) long. Landing platforms shall be provided each 30 feet (9 meters) of length, except where no cage is provided, landing platforms shall be provided for every 20 feet (6 meters) of length. *1910.27(d)(1)(2) & (5)*

Tops of cages on fixed ladders shall extend 42 inches (1 meter) above the top of landing, unless other acceptable protection is provided, and the bottom of the cage shall be not less than 7 feet (2.1 meters) nor more than 8 feet (2.4 meters) above the base of the ladder. *1910.27(d)(1)(iii) & (iv)*

Side rails shall extend 3 1/2 feet (1 meter) above the landing. *1910.27(d)(3)*

Ladders, Portable

Step-ladders shall be equipped with a metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in an open position. *1910.25(c)(2)(i)(f) & 1910.26(a)(3)(viii)*

Ladders shall be inspected frequently and those that have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use." *1910.25(d)(1)(x) & 1910.26(c)(2)(vii)*

Non self-supporting ladders shall be erected on a sound base with the base of ladder a distance from the wall or upper support equal to one-quarter the length of the ladder and placed to prevent slipping. *1910.(d)(2)(i) & (iii); 1910.26(c)(3)(i) &(iii)*

The top of a ladder used to gain access to a roof should extend at least 3 feet (0.9 meters) above the point of contact. *1910.25(d)(2)(xv)*

OSHA requires portable ladders to have nonconductive side rails if used by employees who would be working where they might contact exposed energized circuit parts. *1910.333(c)(iii)(7)*

Lead

The employer shall ensure that no employee is exposed to lead at concentrations greater than 50 ug/m^3 averaged over an 8-hour period. *1910.1025(c)(1)*

Lockout/Tagout (See Control of Hazardous Energy)

Lunchrooms

Employees shall not consume food or beverages in toilet rooms or in any area exposed to a toxic material. *1910.141(g)(2)*

A covered receptacle of corrosion-resistant or disposable material shall be provided in lunch areas for disposal of waste food. The cover may be omitted when sanitary conditions can be maintained without the use of a cover. *1910.141(g)(3)*

Machine Guarding

Machine guarding shall be provided to protect employees in the machine area from hazards such as those created by point of operation, nip points, rotating parts, flying chips, and sparks. The guard shall be such that it does not offer an accident hazard in itself. *1910.212(a)(1) & (2)*

The point-of-operation guarding device shall be so designed as to prevent the operator from having any part of his body in the danger zone during the operating cycle. *1910.212(a)(3)(ii)*

Special supplemental hand tools for placing and removing material shall permit handling of material without the operator placing a hand in the danger zone. *1910.212(a)(3)(iii)*

Some of the machines that usually require point-of-operation guarding are guillotine cutters, shears, alligator shears, power presses, milling machines, power saws, jointers, portable power tools, and forming rolls and calenders. *1910.212(a)(3)(iv)*

Machinery, Fixed

Machines designed for a fixed location shall be securely anchored to prevent walking or moving, or designed in such a manner that they will not move during normal operation. *1910.212(b)*

Mechanical Power Presses

The employer shall provide and ensure the usage of point-of-operation devices to prevent entry of hands or fingers into the point of operation by reaching through, over, under, and around the guard on every operation performed on a mechanical power press. This requirement shall not apply when the point-of-operation opening is 1/4 inch (6 millimeters) or less. *1910.217(c)(1) & (c)(2)(i)(a)*

Hand and foot operations shall be provided with guards to prevent inadvertent initiation of the press. *1910.217(b)(4) & (3)(i)(a) through (g)*

All dies shall be stamped with the tonnage and stroke requirements or be otherwise recorded and readily available to the die setter. *1910.217(d)(6)*

The employer shall provide and enforce the use of safety blocks whenever dies are being adjusted or repaired in the press. Brushes, Swabs, or other tools shall be provided for lubrication so that employees shall not reach into the point of operation. *1910.217(d)(9)(iv) & (v)*

Presence-sensing devices may not be used to initiate the slide motion except when used in total conformance with paragraph (h), 29 CFR 1910.217, which requires certification of the control system. *1910.217(h)*

Machines using full-revolution clutches shall incorporate a single-stroke mechanism. *1910.217(b)(3)(i)*

A main disconnect switch capable of being locked in the off position shall be provided with every power press control system. *1910.217(b)(8)(i)*

To ensure safe operating condition and to maintain a record of inspections and maintenance work, the employer shall establish a program of regular inspections of the power presses that shall include the date, serial number of the equipment, as well as the signature of the inspector. *1910.217(e)(1)(i)*

All point-of-operation injuries must be reported to OSHA or the State agency within 30 days. *1910.217(g)(1)*

Medical Records

Employers must provide newly hired workers with information on and the availability of the employee's medical records, the person responsible for the records, and employees' rights of access. *1910.20(g)(i) through (iii)*

Medical Services and First Aid

The employer shall ensure the ready availability of medical personnel for advice and consultation on matters of occupational health. *1910.151(a)*

When a medical facility for treatment of injured employees is not available in proximity to the workplace, a person or persons shall be trained to render first aid. First-aid supplies approved by a consulting physician shall be readily available. *1910.151(b)*

4,4 Methylenedianiline (MDA)

An employer must ensure that no employee is exposed to an airborne concentration of MDA in excess of 10 parts per billion (ppb) as an 8-hour TWA; a 100 ppb, 15-minute STEL; an action level of 5 ppb; and that there is no dermal contact with MDA. *1910.1050(b) & (c)*

Employers must determine whether employees are subject to MDA exposure above the action level, 8-hour TWA, or STEL, or dermally. *1910.1050(e)(1)(i), (e)(2) & (e)(8)*

Employers must limit airborne exposures to MDA with feasible engineering and work practice controls, supplemented by the use of respirators if necessary, and must limit dermal exposure by providing appropriate personal protective clothing and equipment; regulated areas must be established where exposure may exceed the 8-hour TWA, or dermal exposures to MDA can occur. *1910.1050(f)(1)(i) & (ii), (g)(i) & (ii) & (i)(1)*

Hygiene facilities to include decontamination, change, equipment, shower, and lunch areas may be required to be provided by employers where dermal or elevated levels of exposure to MDA may occur. *1910.1050(j)*

Hazards of exposure to MDA must be communicated to employees via posting signs in regulated areas, labeling containers of MDA, maintaining an MSDS for MDA, and by providing employees with an information and training program. *1910.1050(k)(1) through (3)*

Medical surveillance must be made available to employees exposed dermally to MDA for 15 or more days, exposed above the action level for 30 or more days per year, and in other situations where exposure to MDA may present health risks to employees. Benefits (pay, seniority) must be afforded employees whose exposure to MDA leads to a medical determination that, based on health considerations, the employee must be removed from such exposure. *1910.1050(m)(1) & (m)(9)(v)*

Noise Exposure

Protection against the effects of occupational noise exposure shall be provided when the sound levels exceed those shown in Table G-16 of the Safety and Health Standards. Feasible engineering and/or administrative control shall be utilized to keep exposure below the allowable limit. *1910.95(a)*

When engineering or administrative controls fail to reduce the noise level to within the levels of Table G-16 of the Safety and Health Standards, personal protective equipment shall be provided and used to reduce the noise to an acceptable level. *1910.95(b)(1)*

In all cases, where the sound levels equal or exceed an 8-hour TWA of 85 decibels measured on the A scale, a continuing, effective hearing conservation program shall be administered. In addition, the employer shall develop and implement a monitoring program. *1910.95(c) & (d)(1)*

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

Table G-16 Permissible Noise Exposure[4]

Duration per day, hours	Sound level dBa slow response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

1910.95(b)(2)

The employer shall make available to affected employees or their representatives copies of this standard and also shall post a copy in the workplace. *1910.95(l)(1)*

4 When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: $C_1/T_1 + C_2/T_2$ C_n/T_n exceeds unity, then the mixed exposure should be considered to exceed the limit value. C_n indicates the total time in hours of exposure at a specified noise level, and T_n indicates the total time in hours of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 db peak sound pressure level.

Nonionizing Radiation (Electromagnetic Radiation)

Employers shall be responsible for proper controls to prevent any employee from being exposed to electromagnetic radiation in excess of acceptable limits. *1910.97(a)(2)*

Each electromagnetic radiation area shall be conspicuously posted with appropriate signs and/or barriers. *1910.97(a)(3)*

Permit-Required Confined Spaces

The employer shall evaluate the workplace to determine if confined space conditions exist that necessitate permits for entry. *1910.146(c)(1)*

If permit-required confined spaces exist, exposed employees must be informed of the existence, location, and dangers of the permit space by positive means, such as signs, or there must be an equally effective means of communicating the hazards of these spaces. *1910.146(c)(2)*

If confined space entry is required, a written permit program must be developed and initiated by the employer. *1910.146(c)(4)*

Personal Protective Equipment

Proper personal protective equipment----including covers for the eyes, face, head, and extremities, respiratory devices, and protective shields and barriers----shall be provided, used, and maintained in a sanitary and reliable condition where there is a hazard from processes or environments that may cause injury or illness to the employee. *1910.132(a)*

Where employees furnish their own personal protective equipment, the employer shall be responsible to ensure its adequacy and to ensure that the equipment is properly maintained and in a sanitary condition. *1910.132(b)*

Portable Power Tools (Pneumatic)

For portable tools, a tool retainer shall be installed on each piece of utilization equipment which, without such a retainer, may eject the tool. *1910.243(b)(1)*

Hose and hose connections used for conducting compressed air shall be designed for the pressure and service to which they are subjected. *1910.243(b)(2)*

Power Transmission Equipment Guarding

All belts, pulleys, sprockets and chains, flywheels, shafting and shaft projections, gears, and couplings, or other rotating or reciprocating parts, or any portion thereof, within 7 feet (2.1 meters) of the floor or working platform shall be effectively guarded. *1910.219(b)(1), (c)(2)(i) & (f)(3)*

All guards for inclined belts shall conform to the standards for construction of horizontal belts, and shall be arranged in such a manner that a minimum clearance of 7 feet (2.1 meters) is maintained between the belt and floor at any point outside the guard. *1910.219(e)(3)*

Flywheels located so that any part is 7 feet (2.1 meters) or less above the floor or platform shall be guarded with an enclosure of sheet, perforated, or expanded metal or woven wire. *1910.219(b)(1)(i)*

Flywheels protruding through a working floor shall be entirely enclosed by a guardrail and toeboard. *1910.219(b)(1)(iii)*

Where both runs of horizontal belts are 7 feet (2.1 meters) or less from the floor or working surface, the guard shall extend at least 15 inches (37.5 centimeters) above the belt or to a standard height except that where both runs of a horizontal belt are 42 inches (1.05 meters) or less from the floor, the belt shall be fully enclosed by guards made of expanded metal, perforated or solid sheet metal, wire mesh on a frame of angle iron, or iron pipe securely fastened to the floor to the frame of the machine. *1910.219(e)(1)(i) & 1910.219(m)(1)(i)*

Gears, sprocket wheels, and chains shall be enclosed; unless they are more than 7 feet (2.1 meters) above the floor, or the mesh points are guarded. *1910.219(f)(1) & 1910.219(f)(3)*

Couplings with bolts, nuts or set screws extending beyond the flange of the coupling shall be guarded by a safety sleeve. *1910.219(i)(2)*

Process Safety Management of Highly Hazardous Chemicals

Employers shall develop a written plan of action regarding employee participation and shall consult with employees and their representatives on the conduct and development of process hazards analyses and on the development of the other elements of process safety management. *1910.119(c)(1) & (2)*

The employer shall complete a compilation of written process safety information prior to conducting a process hazard analysis. *1910.119(d)*

The employer shall perform a process hazard analysis appropriate to the complexity of the company's processes and shall identify, evaluate, and control the hazards involved in the process. *1910.119(e)(1)*

The employer shall develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with process safety information. *1910.119(f)(1)*

Each employee presently involved in operating a process and each employee before being involved in operating a newly assigned process shall be trained in an overview of the process and in the operating procedures. *1910.119(g)(1)*

The employer, when selecting a contractor, shall obtain and evaluate information regarding the contract employer's safety performance and programs. *1910.119(h)(2)(i)*

The contract employer shall assure that each contract employee is trained in the work practices necessary to safely perform his/her job. *1910.119(h)(3)(i)*

The employer shall perform a pre-start up safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information. *1910.119(i)(1)*

The employer shall establish and implement written procedures to maintain the ongoing integrity of process equipment. *1910.119(j)(2)*

The employer shall establish and implement written procedures to manage changes to process chemicals, technology, equipment, and procedures, and changes to facilities that affect a covered process. *1910.119(i)(1)*

Railings

A standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of 42 inches (1.05 meters) from upper surface to top rail and/or platform. *1910.23(e)(1)*

A railing for open-sided floors, platforms, and runways, shall have toeboard whenever, beneath the open sides, persons can pass, there is moving machinery, or there is equipment with which falling materials could cause a hazard. *1910.23(c)(1)*

Railings shall be of such construction that the complete structure shall be capable of withstanding a load of at least 200 pounds (90 kilograms) in any direction on any point on the top rail. *1910.23(e)(3)(iv)*

A stair railing shall be of construction similar to a standard railing, but the vertical height shall be no more than 34 inches (85 centimeters) nor less than 30 inches (75 centimeters) from upper surface of top rail to surface of tread in line with face of riser at forward edge of tread. *1910.23(e)(2)*

Respiratory Protection

Suitable respirators selected on the basis of the hazard to which the worker is exposed shall be provided by the employer as necessary to protect the health of the workers. *1910.134(a)(2) & (b)(2)*

Where respirators are required, the employer shall establish and maintain a respiratory protective program. The program shall be regularly evaluated to determine its continued effectiveness. *1910.134(a)(2)*

Written procedures shall be prepared covering the selection and safe use of respirators in dangerous atmospheres encountered in normal operations and emergencies. *1910.134(b)(1) & (e)(3)*

Supervisors and workers shall be properly instructed in the selection, use, and maintenance of respirators. *1910.134(b)(3)*

Respirators shall be regularly cleaned and disinfected and shall be inspected during the cleaning. Deteriorating parts shall be replaced. Respirators for emergency use shall be inspected at least once a month and after each use. When not in use, respirators shall be stored in a convenient, clean, and sanitary location. *1910.134(b)(5)(6) & (7)*

Surveillance of work area conditions and the degree of employee exposure or stress shall be maintained. *1910.134(b)(8)*

Persons shall not be assigned tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. Respirator users' medical status shall be reviewed periodically. *1910.134(b)(10)*

After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators should be quickly accessible at all time. Respirators should not be stored in lockers or tool boxes unless they are in carrying cases or cartons. *1910.134(f)(5)(i)*

Respirator users must be properly instructed in the devices' use and maintenance. *1910.134(e)(5)*

Ropes (See Chains, Cables, Ropes, Hooks)

Saws, Portable Circular (See Woodworking Machinery)

All portable, power-driven circular saws (except those used for cutting meat) having a blade diameter greater than 2 inches (5 centimeters) shall be equipped with guards above and below the base plate or shoe. The upper guards shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base plate to be titled for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically return to the covering position. *1910.243(a)(1)*

Scaffolds

All scaffolds and their supports shall be capable of supporting the load they are designed to carry with a safety factor of at least 4. *1910.28(a)(4)*

All planking shall be Scaffold Grade, as recognized by grading rules for the species of wood used. The maximum permissible spans for 2-inch (5 centimeters) x 9-inch (22.5 centimeters) or wider planks are shown in the following table:

Maximum intended load:	Maximum permissible span using full thickness undressed lumber:	Maximum permissible span using nominal thickness lumber:
25 lbs (11.3 kg) psf	10 ft (3 meters)	8 ft (2.4 meters)
50 lbs (22.7 kg) psf	8 ft (2.4 meters)	6 ft (1.8 meters)
75 lbs (34.0 kg) psf	6 ft (1.8 meters)	Not Applicable

The maximum permissible span for 1 1/4-inch (3.12 centimeters) x 9-inch (22.5 centimeters) or wider plank for full thickness is 4 feet (1.2 meters), with medium loading of 50 pounds (22.5 kilograms) per square foot. *1910.28(a)(9)*

Scaffolds planks shall extend over their end supports not less than 6 inches (15 centimeters) nor more than 18 inches (45 centimeters). *1910.28(a)(13)*

Scaffold planking shall be overlapped a minimum of 12 inches (30 centimeters) or secured from movement. *1910.28(a)(11)*

Skylights

Every skylight floor opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides. *1910.23(4)*

Spray-Finishing Operations

In conventional dry-type spray booths, overspray dry filters or filter rolls, if installed, shall conform to the following: The spraying operations, except electrostatic spraying must ensure an average air velocity over the open face of the booth of not less than 100 feet (30 meters) per minute. Electrostatic spraying operations may be conducted with an air velocity of not less than 60 feet (18 meters) per minute, depending on the volume of the finishing material being applied and its flammability and explosion characteristics. Visible gauges, or audible alarm or pressure-activated devices, shall be installed to indicate or ensure that the required air velocity is maintained. Filter pads shall be inspected after each period of use and clogged filter pads discarded and replaced. Filter pads shall be inspected to ensure proper replacement of filter media. *1910.107(b)(5)(i)*

Spray booths shall be so installed that all portions are readily accessible for cleaning. *1910.107(b)(9)*

A clear space of not less than 3 feet (0.9 meters) on all sides shall be kept from storage or combustible construction. *1910.107(b)(9)*

Space within the spray booth on the downstream and upstream sides of filters shall be protected with approved automatic sprinklers. *1910.107(b)(5)(iv)*

There shall be no open flame or spark producing equipment in any spraying area nor within 20 feet (6 meters) thereof, unless separated by a partition. *1910.107(c)(2)*

Electrical wiring and equipment not subject to deposits of combustible residues but located in a spraying area as herein defined shall be explosion proof. *1910.107(c)(6)*

The quantity of flammable or combustible liquids kept in the vicinity of spraying operations shall be the minimum required for operations and should ordinarily not exceed a supply for 1 day or one shift. *1910.107(e)(2)*

Bulk storage of portable containers of flammable or combustible liquids shall be in separate, constructed building detached from other important buildings or cut off in a standard manner. *1910.107(e)(2)*

Whenever flammable or combustible liquids are transferred from one container to another, both containers shall be effectively bonded and grounded to prevent discharge sparks of static electricity. *1910.107(e)(9)*

All spraying areas shall be kept as free from the accumulation of deposits of combustible residues as practical, with cleaning conducted daily if necessary. Scrapers, spuds, or other such tools used for cleaning purposes shall be of nonspark material. *1910.107(g)(2)*

Residue scrapings and debris contaminated with residue shall be immediately removed from the premises. *1910.107(g)(3)*

"No smoking" signs in large letters on contrasting color background shall be conspicuously posted in all spraying areas and paint storage rooms. *1910.107(g)(7)*

Stairs, Fixed Industrial

Every flight of stairs having four or more risers shall be provided with a standard railing on all open sides. Handrails shall be provided on at least one side of closed stairways, preferable on the right side descending. *1901.23(d)(1) & 24(h)*

Stairs shall be constructed so the rise height and tread width are uniform throughout. *1910.24(e)*

Fixed stairways shall have a minimum width of 22 inches (55 centimeters). *1910.24(d)*

Fixed stairways shall be provided for access from one structure to another where operations necessitate regular travel between levels, and for access to operating platforms at any equipment which requires attention routinely during operations. Fixed stairs shall also be provided where access to elevations is daily or at each shift where such work may expose employees to harmful substances, or for which purposes the carrying of tools or equipment by hand is normally required. Spiral stairways shall not be permitted except for special limited usage and secondary access situations where it is not practical to provide a conventional stairway. *1910.24(b)*

Storage

All stored materials stacked in tiers shall be stacked, blocked, interlocked, and limited in height so that they are secure against sliding or collapse. *1910.176(b)*

Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion or pest harborage. Vegetation control will be exercised when necessary. *1910.176(c)*

Where mechanical handling equipment is used, sufficient safe clearance shall be allowed for aisles, at loading docks, through doorways, and whenever turns or passage must be made. *1910.176(a)*

Tanks, Open-Surface

Where ventilation is used to control potential exposure to employees, it shall be adequate to reduce the concentration of the air contaminant to the degree that a hazard to employees does not exist. *1910.94(d)(3)*

Whenever there is a danger of splashing, the employees shall be required to wear either tight-fitting chemical goggles or an effective face shield. *1910.94(d)(9)(v)*

There shall be a supply of clean cold water near each tank containing liquid that may be harmful to the skin if splashed upon the worker's body. The water pipe shall be provided with a quick opening valve and at least 48 inches (1.2 meters) of hose not smaller than 3/4 inch (1.8 centimeters). Alternatively, deluge shower and eye flushes shall be provided. *1910.94(d)(9)(vii)*

All employees working in and around open-surface tank operations must be instructed as to the hazards of their respective jobs and in the personal protection and first-aid procedures applicable to these hazards. *1910.94(d)(9)(i)*

Toeboards

Railings protecting floor openings, platforms, and scaffolds shall be equipped with toeboards whenever persons can pass beneath the open side, wherever there is equipment with which falling material could cause a hazard. *1910.23(c)(1)*

A standard toeboard shall be at least 4 inches (10 centimeters) in height and may be of any substantial material, either solid or open, with openings not to exceed 1 inch (2.5 centimeters) in greatest dimension. *1910.23(e)(4)*

Toilets

Water closets shall be provided according to the following: 1-15 persons, one facility; 16-35 persons, two facilities; 36-55 persons, three facilities; 56-80 persons, four facilities; 81-110 persons, five facilities; 111-150 persons, six facilities; over 150 persons, one for each additional 40 persons. Where toilet rooms will be occupied by no more than one person at a time, can be locked from the inside, separate rooms for each sex need not be provided. *1910.141(c)(1)(i)*

Each water closet shall occupy a separate compartment with a door and walls or partitions between fixtures sufficiently high to ensure privacy. *1910.141(c)(2)*

Wash basins (lavatories) shall be provided in every place of employment. *1910.141(d)*

Lavatories shall have hot, cold or tepid running water, hand soap or equivalent, and hand towels, blowers or equivalent. *1910.141(d)(2)(ii) & (iv)*

The above requirements do not apply to mobile crews or normally unattended locations, as long as employees working at these locations have transportation immediately available to nearby toilet facilities. *1910.141(c)(1)(ii)*

Welding-General (See Welding in Confined Spaces)

Arc welding cables with damaged insulation or exposed bare conductors shall be replaced. *1910.254(d)(9)(iii)*

Refer to 29 CFR 1910.252(c)(5) through (10) for special considerations when welding operations require fluxes, coverings, coatings, or alloys involving fluorine compounds, zinc, lead, beryllium, cadmium, or mercury.

Mechanical ventilation shall be provided when welding or cutting:

where there is less than 10,000 cubic feet (300 cubic meters) per welder; where the overhead height is less than 16 feet (4.8 meters). *1910.252(c)(2)(i)(A) & (B)*

Proper shielding and eye protection to prevent exposure of personnel from welding hazards shall be provided. *1910.252(b)(2)(i)(B) through (D) & (F) through (H)*

Workers or other persons adjacent to the welding areas shall be protected from the welding rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles. The screens shall be so arranged that no serious restriction of ventilation exists. *1910.252(b)(2)(iii) & 1910(c)(1)(iii)*

Woodworking Machinery

All woodworking machinery---such as table saws, swing saws, radial saws, band saws, jointers, tenoning machines, boring and mortising machines, shapers, planers, lathes, sanders, veneer cutters, and other miscellaneous woodworking machinery---shall be enclosed or guarded, except that part of the blade doing the actual cutting, to protect the operator and other employees from hazards inherent to the operation. *1910.213(c) through (r)*

Power controls and operating controls should be located within easy reach of the operator while at his/her regular work location, making it unnecessary for the operator to reach over the cutter to make adjustments. This does not apply to constant pressure controls used only for setup purposes. *1910.213(b)(3) & (4)*

Re-starts. In operations where injury to the operator might result if motors were to restart after power failures, provision shall be made to prevent machines from automatically restarting upon restoration of power. *1910.213(b)(3)*

Band saw blades shall be enclosed or guarded except for the working portion of the blade between the bottom of the guide rolls and the table. Band saw wheels shall be fully encased. The outside periphery of the enclosure shall be solid. The front and back shall be either solid or wire mesh or perforated metal. *1910.213(i)(1)*

Circular table saws shall have a hood over the portion of the saw above the table mounted so that the hood will automatically adjust itself to the thickness of and remain in contact with the material being cut. *1910.213(c), (d)(1) & (e)(1)*

Circular table saws shall have a spreader aligned with the blade, spaced no more than 1/2 inch (8 millimeters) behind the largest blade mounted in the saw. The provision of a spreader in connection with grooving, dadoing, or rabbeting is not required. *1910.213(c)(2), (d)(2) & (e)(2)*

Circular table saws used for ripping shall have nonkickback fingers or dogs. *1910.213(c)(3) & (f)(2)*

Inverted swing or sliding cut-off saws shall be provided with a hood that will cover the part of the saw that protrudes above the top of the table or material being cut. *1910.213(g)(4)*

Radial saws shall have an upper guard that completely encloses the upper half of the saw blade. The sides of the lower exposed portion of the blade shall be guarded by a device that will automatically adjust to the thickness of and remain in contact with the material being cut. *1910.213(h)(1)*

Radial saws used for ripping shall have nonkickback fingers or dogs. *1910.213(h)(2)*

Radial saws shall have an adjustable stop to prevent the forward travel of the blade beyond the position necessary to complete the cut in repetitive operations. *1910.213(h)(3)*

Radial saws shall be installed so that the cutting head will return to the starting position when released by the operator. *1910.213(h)(4)*

Rip saws shall have a spreader aligned with the blade and shall be no thinner than the blade. The provision of a spreader in connection with grooving, dadoing, or rabbeting is not required. *1910.213(c)(3) & (f)(2)*

Rip saws shall have nonkickback fingers or dogs. *1910.213(c)(3) & (f)(2)*

Self-feed circular saws' feed rolls and blades shall be protected by a hood or guard to prevent the hand of the operator from coming into contact with the in-running rolls at any point. *1910.213(f)(1)*

Swing or sliding cut-off saws shall be provided with a hood that will completely enclose the upper half of the saw. *1910.213(g)(1)*

Swing or sliding cut-off saws shall be provided with limit stops to prevent the saws from extending beyond the front or back edges of the table. *1910.213(g)(3)*

Swing or sliding cut-off saws shall be provided with an effective device to return the saw automatically to the back of the table when released at any point of its travel. *1910.213(g)(2)*

Procedure No 4
Subject: Hazard Communication
Reference: CFR1910.1200 and TN Rule 0800-1-9
Distribution All Employees Review Date: February 20, 2009

Purpose:	The purpose of this hazard communication plan is to provide guidance, recommendations and requirements established to govern the use of substances that pose an exposure risk to hazardous materials. All RSCC employees, students and participating guests using chemicals are expected to be familiar with these guidelines and conduct their operations accordingly.

Program Explanation

The Roane State Community College's Hazardous Chemical Right-To-Know Program is modeled after the Tennessee Hazardous Chemical Right-To-Know Law passed by the General Assembly on May 23, 1985. The Tennessee Right-To-Know Law was enacted because of expressed concern relative to the proliferation and variety of chemicals present in our society and their effect on the safety, health, and welfare of persons living and working in Tennessee.

The intent and purpose of Roane State Community College's Right-To-Know Program is to provide necessary information that will enable college employees and students to become knowledgeable of the chemicals they work with and to which they may be exposed.

The college's Right-To-Know Program centers around the completion of the following steps:

1. Assigning an individual responsible for implementing the program in each department, clinic, or in each work area.

2. Making a list of all chemicals and by-products used, stored, or produced in each department, clinic, or area.

3. Obtaining a current Material Safety Data Sheet (MSDS) for each chemical, substance, or by-product listed.

4. Determining which chemicals, by-products, or substances are hazardous.

5. Preparing the Workplace Hazardous Chemical List.

6. Submitting the hazardous chemical list to the Health and Safety Office for compilation and submission to TOSHA. In order to meet the TOSHA suspense date of January 31, lists must be received by the Health and Safety Office no later than the 15th day of December each year.

7. Ensuring that all containers are properly labeled.

8. Training the employee.

Notification

The State of Tennessee Hazardous Chemical Right-To-Know Poster will be the authorized means of informing employees about their rights under the Right-To-Know Law. The State of Tennessee Public Employee Safety and Health Protection On-The-Job Poster informs employees of their rights under the Tennessee Occupational Safety and Health Law. These posters, available from the Health and Safety Office, must be displayed in a conspicuous location for each area.

Material Safety Data Sheet

All manufacturers and distributors supplying RSCC with products which contain hazardous chemicals, or are in themselves physical hazards, must provide the college with a Material Safety Data Sheet for that product. The Material Safety Data Sheet must be provided prior to, or with, the initial shipment of the product to the College. If an MSDS is updated, a copy must be forwarded with the first shipment after occurrence of that update. If a product is not considered hazardous, the supplier must provide a statement to that effect. If an MSDS is not shipped with the product or received within five (5) days, the department should request it in writing.

Each department, lab or clinic must maintain a copy of the current Material Safety Data Sheet for each hazardous chemical in the workplace. Material Safety Data Sheets are also maintained by the Health and Safety Office.

Material Safety Data Sheets must be maintained on a current basis and must be readily accessible to employees at all times. If an employee seeks a Material Safety Data Sheet and it is not available, they may submit a written request through their department representative to the Health and Safety Office. The Health and Safety Office is required to furnish a copy within three (3) business days after receiving the written request. If the Material Safety Data Sheet is not available, the Health and Safety Office will notify the requestor that an effort has been made to obtain the MSDS. If after two weeks, the Health and Safety Office is still unable to obtain the requested Material Safety Data Sheet, the employee shall not be required to work with the hazardous chemical for which the MSDS was requested. There shall be no penalty for not doing such work. Reassignment of the employee to other work, at equal pay and benefits, shall not be considered a penalty under this section.

Employee Rights

The following statements of rights are reproduced from Tennessee House Bill 731 - Hazardous Chemical Right-To-Know Law:

1. *Employees who may be exposed to hazardous chemicals shall be informed of such exposure and shall have access to the workplace chemical list and Material Safety Data Sheets for the hazardous chemicals.*

2. *No non-manufacturing employer, manufacturing employer, or distributor shall discharge, or cause to be discharged, or otherwise discipline, or in any manner discriminate against an employee because the employee has filed a complaint, assisted an inspector of the commissioner who may make or is making an inspection under Section 16(b) of the Act, or has instituted or caused to be instituted any proceeding under or related to this Act or has testified or is about to testify in any such proceeding or because of the exercise of any rights afforded pursuant to the provisions of this Act on behalf of the employee or on behalf of others, nor shall pay, position, seniority or other benefits be lost for exercise of any right provided by this Act.*

3. *Any waiver by a person of the benefits or requirements of this Act shall be against public policy and be null and void. Any employer's request or requirement that a person waive any rights under this Act as a condition of employment shall constitute a violation.*

Container Labeling

All containers of hazardous chemicals must be properly labeled, tagged, or marked. Proper labels should indicate the following:

1. Identity of the hazardous chemical, i.e., the common and/or chemical name as well as any chemical ingredients.

2. The name and address of its manufacturer, importer, or other responsible party.

3. Its potential physical hazards (If not handled properly, it might burn, explode, react, etc.).

4. Its potential health hazards (e.g., overexposure may irritate the skin, burn the eyes, cause dizziness, cause cancer, etc.).

NOTE: Existing labels on containers must not be removed or defaced.

Container Transfer

If a college employee transfers a hazardous chemical from the original container to another container the label information (chemical or product name and associated hazard(s) – i.e. hydrochloric acid, corrosive) from the original container must be transferred to the new container.

Education and Training Program

Prior to beginning work, each new employee should attend a Health and Safety orientation program at which time information on Right-To-Know and training on hazardous chemicals present in their workplace will be given. Types of training will vary due to job related activities per requirements of 29 CFR 1910.1200.

Hazardous Chemical Inventory

Each department must make a Workplace Hazardous Chemical List of all chemicals (materials) present in that area.

Hazardous Determination

The college is required by the Right-To-Know Law to maintain an inventory of all hazardous chemicals (materials) in the workplace. From this inventory, information is obtained to aid in employee education and training, and data is compiled for required submission to the Department of Labor concerning the hazards on campus. It is essential that all departments complete their inventories as accurately as possible.

Material Safety Data Sheets may be used to evaluate whether the listed chemicals are hazardous. Chemicals which are hazards will be designated as such or listed in the hazardous ingredients section of the Material Safety Data Sheet. If the department does not have an MSDS, it may be requested from the Health and Safety Office.

Additional Requirements

In addition to maintaining Workplace Hazardous Chemical Lists for all chemicals, the college must compile and maintain a separate Workplace Chemical List for all chemicals stored or used in **excess** of 55 gallons or 500 pounds. This list must also include pressurized cylinders if **more than four** are present in the workplace (exception: **all** cylinders of acetylene must be reported, regardless of quantity).

Procedure No 5
Subject: Personal Protective Equipment
Reference: CFR1910.132 and NFPA 70E
Distribution All Employees Review Date: February 20, 2009

Purpose:	This policy applies to the use of personal protective equipment by RSCC facilities' employees. Personal protective equipment such as protective clothing, respiratory protection, gloves, goggles and face shields, etc. shall be used to protect against chemical, biological, mechanical and irritant hazards capable of causing injury or impairment through absorption, inhalation, or physical contact.

Scope: This policy requires PPE be provided, used, and maintained in a sanitary and reliable condition. Failure to comply with this PPE policy is grounds for disciplinary action in accordance with RSCC's Progressive Disciplinary Policy.

Responsibilities: The hazard assessment certification is a process that produces a written record of the hazard assessment for particular work tasks. Supervisors are responsible for ensuring that hazard assessments are performed and the written certifications are signed, dated, and are submitted to the Health and Safety Officer for recordkeeping purposes. Copies of the written policy and certifications can be posted or maintained for review in applicable Physical Plant shops. See Attachment A for instructions in completing the certification of hazard assessment. Specific responsibilities follow:

- Supervisor Responsibilities - After completing a hazard assessment and determining that hazards are present, or likely to be present, the supervisor shall do the following:
    - Assure the adequacy of the PPE; proper fit protection, maintenance, and sanitation.
    - Ensure every affected employee knows how to use their PPE correctly and that they use the required PPE when performing work tasks identified in the hazard assessment.
    - Prevent the use of PPE that is defective or damaged. Defective or damaged PPE must be replaced.
    - Never assign a work task for which PPE is required but not available.
- Employee Responsibilities - After a hazard assessment has been performed and hazards identified that require PPE, the employee shall do the following:
    - Never perform a task for which PPE is required but not available.
    - Always wear and use required PPE correctly.
    - Never use PPE that is defective or damaged.

- Health and Safety Responsibilities - Implement the PPE policy and support the affected supervisors and employees in the proper selection, maintenance and cleaning of PPE.

    - Assess workplace exposures and recommend PPE where needed.
    - Train employees in proper PPE use.
    - Investigate injuries and/or illnesses to determine causal factors. If injuries or illnesses are caused by PPE non-use, ineffectiveness, negligent use or lack of PPE, Health and Safety will submit their findings and recommendations to the Vice President of the Financial Services.

Hazard Assessment And Certification: Hazard assessment is a process (required by OSHA) of identifying hazards associated with a work task and recommending PPE along with other relevant protection measures to reduce the risk from the hazards. The Health and Safety Officer has established the framework for our hazard assessment, however to comply with OSHA PPE certification requirements, supervisors shall assess work tasks to determine if hazards are present or likely to be present that require the use of personal protective equipment.

Specific Protection Guidelines:

- Eye and Face Protection - Each affected employee shall:

    - Use appropriate eye and face protection equipment when exposed to hazards from flying objects or particles, molten metal, fumes, chemical liquids, gases, vapors, dusts, acids, caustics, and other potentially injurious chemical or physical hazards. Prescription lenses are allowed if the frame and lens complies with current ANSI safety eyewear standards. Over-the-glasses (OTGs) safety eyewear that complies with ANSI standards is an acceptable alternative.
    - Use appropriate eye protection equipment with filter lenses that have a shade number appropriate for the work being performed when exposed to an eye hazard from potentially injurious light radiation. Refer to Attachment B for a summary of eye and face protection selection specifics.

- Foot Protection - Each affected employee shall wear protective footwear when working in areas where there is danger of objects falling on or rolling across feet, piercing the sole, and where the feet are exposed to electrical or chemical hazards. Foot protection shall be provided by the affected employees department. Refer to Attachment B for a summary of foot protection selection specifics.

- Hand and Body Protection - Supervisors shall select and require employees to use appropriate hand protection when the hands are exposed to hazards from severe cuts, lacerations, abrasions or punctures, chemical or thermal burns, harmful temperature extremes, and skin absorption of harmful substances. Refer to Attachment B for a summary of hand and body protection selection specifics.

- Head Protection - Each affected employee shall wear protective helmets when working in areas where there is a potential for injury to the head from falling objects or "bump" hazards. Refer to Attachment B for a summary of head protection selection specifics.

- Hearing Protection - Each employee shall wear appropriate hearing protection in environments where noise levels equal or exceed the OSHA Occupational Noise Exposure Standard (29 CFR 1910.95) 8-hour time weighted average (TWA) of 85 dBA. Refer to Attachment B for a summary of hearing protection selection specifics

- Respiratory Protection - The use of respiratory protective equipment (respirators) shall be in compliance with the RSCC Respiratory Protection Program. Voluntary use of filtering face pieces is covered in the RSCC Respiratory Protection Program. Refer to Attachment B for a summary of respirator selection specifics.

- Electrical Protection - Refer to Attachment C for electrical protection selection specifics.

Training Requirements and Certification: The Health and Safety Officer in cooperation with supervisors shall provide adequate training to each employee who is required to use PPE. Each employee shall be trained to know at least the following:

- When is PPE is necessary?
- What PPE is necessary for the task?
- How to properly don, doff, adjust, and wear PPE.
- The limitations of the PPE.
- The proper care, maintenance, useful life, and disposal of the PPE.

Each affected employee must demonstrate an understanding of the training provided, and the ability to use the PPE properly, before performing any work requiring the use of PPE.

Instructions for Completing Hazard Assessment (Attachment A):

A hazard assessment, required by TOSHA is the primary method for determining what PPE is needed. RSCC shops must certify that a hazard assessment has been performed by completing a certification form. The certification form must be signed and attached to all checklists submitted to Health and Safety.

Health and Safety has completed a PPE assessment of the tasks routinely performed by all shops. Some infrequent and/or unique work tasks performed by a shop have not been included; therefore it is imperative that supervisors complete the questionnaires and certify that the assessment is inclusive of all work task hazards and that PPE is required. Refer to Attachment B for the list of work tasks that have been assessed by the Health and Safety Officer.

When supervisors have reason to believe that employees who have already been trained, do not have the understanding and skill required, the supervisor shall retrain the employee. Circumstances that render previous training inadequate and therefore require new PPE training or retraining include, but are not limited to:

- Changes in the workplace.
- Changes in the types of PPE to be used.
- Inadequacies in the affected employee's knowledge or use of assigned PPE.

Supervisors must verify that each affected employee has received and understood the required training. Health and Safety will record the name of each employee trained, the date(s) of training, and the training topic identified **(Attachment D)**.

INSTRUCTIONS
for
Completing Hazard Assessment and Certification

Step 1. **Hazard Assessment Checklists** - Checklists included in **Attachment A** lists the types of hazards that are to be assessed to determine the appropriate PPE. Each Hazard Assessment Checklist should be reviewed to insure all applicable work tasks are assessed.
Work tasks not included in the hazard assessment checklists can be added at the discretion of the supervisor to determine PPE needs for those tasks.

Step 2. Sign and Date the Supervisor's Certification Box in **Attachment A**.

Step 3. Submit the completed Hazard Assessment Checklists (**Attachment A**) to Health and Safety. Keep copies of the completed assessment, as necessary.

Step 4. PPE Training – Training shall be documented using the training form included as Attachment D.

If you have questions related to this hazard assessment program or need further assistance related to a safety or health issue, please contact the Health and Safety Office.

This document represents certification of a hazard assessment conducted for tasks presented in the checklists that are included in Attachment A. This certification document facilitates compliance with the hazard assessment requirements of OSHA 29 CFR 1910.132(d)(2), and the RSCC PPE Policy. It is understood that proper PPE selection, fitting, and training is part of the implementation process.

RSCC Hazard Assessment
SUPERVISOR'S CERTIFICATION

Shop: _____ **Supervisor:** _____

I certify that a PPE assessment has been completed for all work tasks listed and those work tasks that were added.

_____ **day of** _____**, 2009** _____

Signature

Check this box if PPE is requested for your shop. ☐

Foot and leg protection is required when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects that may pierce the sole of the shoe or where an employee's feet are exposed to electrical hazards. Leggings may be required where there is the possibility of burns from extremely cold or hot materials. Refer to Attachment B for the list of work tasks that have been assessed by the Health and Safety Officer.

HAZARD ASSESSMENT CHECKLIST

Work Tasks	Hazard/Risk Questionnaire	Y / N
Shipping and receiving, carpentry, plumbing, building maintenance, trenching, grass and weed cutting, carrying heavy objects, etc.	Can tools, sharp objects, heavy equipment or other heavy objects roll, fall onto, or strike employee's feet?	
New wiring or rewiring, opening electrical panels to test circuits, pulling and replacing fuses, etc.	Do your employees work with or near exposed electrical wiring components?	

Hand and arm protection is required when the risk of injury from cuts/punctures, burns, chemicals, electrical shock, human blood or body fluids, or abrasive material cannot be engineered out of the workplace. There is not a single type of glove that will provide adequate protection from all exposures. Follow the manufacturer's recommendation for the hazard each glove type will protect against. Refer to Attachment B for the list of work tasks that have been assessed by the Health and Safety Officer.

HAZARD ASSESSMENT CHECKLIST

Work Tasks	Hazard/Risk Questionnaire	Y / N
Grinding, sanding, sawing, hammering, material handling, etc.	Do hands come in contact with tools or materials that might scrape, bruise, or cut?	
Painting, housecleaning, cleaning of tools and equipment in a parts washer, etc.	Are chemicals, blood or other body fluids handled that may contact skin?	
Welding, soldering, working on boilers or steam lines, etc.	Do work procedures require hands and arms near extreme heat or cold?	
New wiring or rewiring, opening electrical panels, pulling and replacing fuses, building maintenance, remodeling, etc.	Are hands or arms placed near exposed electrical wiring or components?	

Hearing Protection

It is anticipated that RSCC employees work in a variety of noise exposures and it is recognized that employees are exposed to loud noises that are above the 85 dBA threshold which is widely accepted as the sound pressure level that can cause noise induced hearing loss. Health and Safety can assess the work place to determine sound levels expressed as an 8-hour time weighted average or as peak impulsive sound pressure levels. Refer to Attachment B for the list of work tasks that have been assessed by the Health and Safety Officer.

HAZARD ASSESSMENT CHECKLIST

Work Tasks	Hazard/Risk Questionnaire	Y / N
Grinding, sanding, work near conveyors, pneumatic equipment, ventilation fans, motors, drilling, etc.	Are your employees exposed to loud noise from machines, tools, and other systems that generate loud noise, etc?	

Eye and Face Protection. Appropriate eye and face protection, such as safety glasses, goggles, and face shields, must be used to protect against the hazards associated with flying particles, molten metal, liquid chemicals, acids and caustic liquids, chemical gases and vapors, or potentially injurious light radiation from welding or laser operations. Refer to Attachment B for the list of work tasks that have been assessed by the Health and Safety Officer.

HAZARD ASSESSMENT CHECKLIST

Work Tasks	Hazard/Risk Questionnaire	Y / N
Sawing, cutting, drilling, sanding, grinding, hammering, chopping, abrasive blasting, punch press operations.	Do employees perform tasks, or work near employees who perform tasks, that might produce airborne dust or flying particles?	
Pressurized spraying or use of a pressure washer.	Do employees perform tasks, or work near employees who perform tasks that might generate airborne particles at high velocity?	
Pouring or mixing chemicals, painting, housecleaning, siphoning, battery charging.	Do employees handle, or work near employees who handle hazardous liquid chemicals, cryogenic materials or encounter blood splashes?	
Installing fiberglass insulation, use of compressed air or compressed gases, etc.	Are employees' eyes exposed to other potential physical or chemical irritants?	
Welding, torch cutting, etc.	Are employees exposed to intense light that is hazardous?	

PPE shall comply with appropriate ANSI standards, when standards exist.

Hazard Assessment Survey for RSCC Personnel

EYE AND FACE PROTECTION - appropriate eye and/or face protection is required when employees are in areas where there is exposure to eye and face hazards from flying particles, molten metal, liquid chemicals, acids, caustic liquids, chemical gases or vapors or potentially injurious light radiation. All eye protection must be ANSI approved.

AFFECTED SHOPS	WORK TASKS	HAZARDS	TYPES OF PPE
• Agricultural • Carpentry • Paint Shop • Grounds • Boiler rooms • Plumbing • HVAC • Electrical • Preventative Maintenance	**IMPACT** chipping, grinding, masonry work, woodworking, sawing, drilling, chiseling, scraping, sanding, weed eating, mowing, visiting construction sites, etc.	Flying fragments, objects, large chips, particles, sand, dirt, etc.	➢ **Spectacles with side protection** ➢ **Goggles** ➢ **Face Shield.** Face shields should be used for severe exposure and can only be worn over primary eye protection (glasses or goggles). Persons whose vision requires the use of prescription lenses must wear either protective devices fitted with prescription lenses or protective devices designed to be worn over regular prescription eye wear.
• Custodial • Grounds • Agricultural • Paint • Plumbing • HVAC • Boiler rooms • Electrical • Preventative Maintenance	**CHEMICALS** Chemical handling/testing, cleaning sanitary sewers, painting, checking batteries, pesticide application, etc.	Splash, irritating mists, etc.	➢ **Goggles.** For severe exposure use face shield. ➢ **Face Shield.** Face shields can only be worn over primary eye protection (glasses or goggles).
• Custodial • Carpentry • Grounds • Agricultural • Boiler rooms • Preventative Maintenance	**DUST** Woodworking, buffing, particularly dusty conditions, removing ceiling tiles, shoveling ash, etc.	Nuisance dust	➢ **Spectacles with side protection** ➢ **Goggles**
• Plumbing Shop • Agricultural • HVAC Shop • Boiler rooms • Agricultural	**LIGHT / RADIATION** Electric arc welding, gas welding, cutting, torch soldering, etc.	Optical radiation	➢ **Welding helmets** ➢ **Welding shields** ➢ **Welding goggles** <u>*Typical Shades*</u>: *electric arc 10-14; gas welding 4-8; cutting 3-6; brazing 3-4.*

HEAD PROTECTION - appropriate head protection is required when employees are in areas where there is a potential for injury to the head from falling or moving objects or when they are exposed to electrical conductors which could be contacted by the head. All head protection must be ANSI approved.

AFFECTED SHOPS	WORK TASKS	HAZARDS	TYPES OF PPE
• Agricultural • Carpentry • Paint Shop • Grounds • Boiler rooms • Plumbing • HVAC • Electrical • Preventative Maintenance	Tree cutting or pruning, visiting construction areas, steam tunnel entry, routine activities where an overhead hazard exists or there is a possibility of falling objects, overhead exposed electrical conductors etc.	Limbs and branches, construction hazards, bump hazards, falling objects	➢ **ANSI approved hard hats or bump caps**

FOOT PROTECTION - appropriate foot protection is required when employees are in areas where there is danger of foot injuries due to falling and rolling objects, slip hazards or objects piercing the sole, and where employees are exposed to electrical hazards. All foot protection must be ANSI approved.

AFFECTED SHOPS	WORK TASK	HAZARD	TYPE OF PPE
• Carpentry • Paint Shop • Grounds • Boiler rooms • Plumbing • HVAC • Electrical • Preventative Maintenance • Agricultural	Visiting construction areas, lifting and transporting parts, equipment, etc., cleaning sanitary sewers and work in other wet areas, etc.	Falling and/or rolling objects, sharp objects, slip hazards	➢ **Waterproof Boots** ➢ **Overshoe Protection (Rubber, Tyvek, Steel Toe)** ➢ **ANSI approved steel or composite toe shoes with or with/out metatarsal protection.** *(The Physical Plant provides Grounds with 1 new pair per year, while Maintenance will receive 1 new pair every two years).*

HAND PROTECTION - appropriate hand protection is required when employees are in areas where their hands are exposed to skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns or harmful temperature extremes. Appropriate gloves are dependent upon the type of chemical contaminant or physical hazard. Special care must be taken when selecting gloves for chemical exposure to assure glove is resistant to the chemical in question.

AFFECTED SHOPS	WORK TASKS	HAZARDS	TYPES OF PPE
• Carpentry • Paint • Grounds • Boiler rooms • Plumbing • HVAC • Electrical • Preventative Maintenance • Custodial • Agricultural	Handling chemicals, welding, cutting, metal working, material handling, brick laying, etc.	chemicals, sharp edges, abrasive surfaces, heat and steam	➢ **Chemical Resistant Gloves:** including but not limited to vinyl, latex, rubber, nitrile, neoprene (special care must be taken when selecting gloves for chemical usage to assure they are resistant and won't allow breakthrough to the skin); **Leather or Cut Resistant Gloves** **Heat Resistant Gloves**

HEARING PROTECTION - appropriate hearing protection is required when employees are in areas where there is exposure to excessive noise levels. Protection is not required unless the employee's time weighted average exposure exceeds 85 decibels (db) for an 8-hour exposure. It is recommended that appropriate hearing protection devices are provided to employees for use in all high noise areas (mechanical rooms, chiller plant, boiler rooms, etc.) as a precautionary measure.

AFFECTED SHOPS	WORK TASKS	HAZARDS	TYPES OF PPE
• Drafting • Carpentry • Paint • Grounds • Boiler rooms • Plumbing • HVAC • Electrical • Preventative Maintenance • Custodial • Agricultural	Routine maintenance activities in high noise areas, work in the chiller plant and boiler rooms, mowing grass, weed eating, blowers, other high noise equipment operation	Noise or Sound Pressure Levels above 85 dbA	➢ **Ear plugs** ➢ **Ear Muffs** *Hearing Protection Devices should have a noise reduction rating (NRR) of 25 dbA or higher.*

RESPIRATORY PROTECTION - appropriate respiratory protection is required when employees are in areas where effective engineering controls are not feasible to protect the health of the employee from harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors.

AFFECTED SHOPS ***(Designated Users)***	**WORK TASKS**	**HAZARDS**	**TYPES OF PPE**
• Agricultural • Grounds • HVAC • Painters • Preventative Maintenance • Warehouse ***(See Respiratory Protection Policy)***	Asbestos abatement, application of paints, lead-based paint removal, pesticides and herbicides use, responding to a refrigerant leak, welding/cutting in enclosed or unventilated space, mold remediation, sand blasting, replacing air filters, hazardous waste handling, etc.	Dust, fumes, mists, vapors, biological and radioisotope contami-nants	➢ **Negative pressure half and full face air-purifying respirators*** ➢ **Self-Contained Breathing Apparatus (SCBA)** * N95, N100, P95 and P100 filters; organic vapor or other appropriate filter/cartridge are available for negative air-purifying respirators
VOLUNTARY USE			
• Custodial • Paint • Carpenter • Grounds • Agricultural • HVAC • Electrical • Preventative Maintenance • Warehouse	SARS clean up, applying paint in a well ventilated space or outdoors, grass mowing, dusting woodworking, masonry work, weeding using a string trimmer, etc.	**Nuisance Levels (Below the PEL)** dust, organic vapors, fumes	➢ **Filtering Facepiece*** * N95, N100 classifications P95 w/ organic vapor relief

All required respirators must be NIOSH/MSHA approved.

Electrical Protective Devices Assessment

Electricity-related hazards include electric shock and burns, arc-flash burns, arc-blast impacts, and falls.

- **Electric shock and burns.** An electric shock occurs when electric current passes through your body. This can happen when you touch an energized part. If the electric current passes across the chest or head, you can be killed. At high voltages, severe burns can result.
- **Arc-flash burns.** An electric arc flash can occur if a conductive object gets too close to a high-amp current source or by equipment failure (for instance, while opening or closing disconnects). The arc can heat the air to temperatures as high as 35,000° F, and vaporize metal in the equipment. The arc flash can cause severe skin burns by direct heat exposure and by igniting clothing.
- **Arc-blast impacts.** The heating of the air and vaporization of metal creates a pressure wave that can damage hearing and cause memory loss (from concussion) and other injuries. Flying metal parts are also a hazard.

APPLICABLE WORK TASKS	**CLOTHING REQUIREMENT**
On systems operating at less than 1000 volts, these tasks include work on all equipment *except* • Insertion/removal of low-voltage motor starter "buckets" • Insertion/removal of power circuit breakers with the switchgear doors open • Removal of bolted covers from switchgear. On systems operating at 1000 volts or more, tasks also include the operation, insertion, or removal of switching devices *with equipment enclosure doors closed.*	**Everyday work clothing** Flame-resistant (FR) long-sleeve shirt (minimum arc thermal performance exposure value (ATPV) of the clothing in calories /cm^2) worn over an untreated cotton T-shirt with FR pants (minimum ATPV of 8) *Or* FR coveralls (minimum ATPV of 5) worn over an untreated cotton T-shirt (or an untreated natural-fiber long-sleeve shirt) with untreated natural-fiber pants.
All hazard/risk category 3 and 4 tasks On systems operating at 1000 volts or more, these tasks include work on energized parts of all equipment. On systems of less than 1000 volts, tasks include insertion or removal of low-voltage motor-start motor control center "buckets," insertion or removal of power circuit breakers with the switchgear enclosure doors open, and removal of bolted covers from switchgear.	**Electric "switching" clothing** Double-layer FR flash jacket and FR bib overalls worn over either FR coveralls (minimum ATPV of 5) or FR long-sleeve shirt and FR pants (minimum ATPV of 5) worn over untreated natural-fiber long-sleeve shirt and pants worn over an untreated cotton T-shirt *Or* Insulated FR coveralls (minimum ATPV of 25,

	independent of other layers) worn over untreated natural-fiber long-sleeve shirt with untreated cotton blue jeans ("regular weight," minimum 12 oz./sq. yd. fabric weight), worn over an untreated cotton T-shirt.

- **Falls.** Electric shocks and arc blasts can cause falls, especially from ladders or unguarded scaffolding.

To substantially reduce the risk of shock and arc flash hazards the equipment should be de-energized by means of following *Lockout/Tagout* procedures and using lock out devices and grounds where required. When it is not feasible to de-energize the equipment and the work is to be performed within the ***prohibited approach*** *and* ***flash protection boundaries*** safe work procedures are mandatory as they are defined by OSHA and the NFPA.

Electrical Protective Devices - appropriate electrical protective devices in the form of insulating blankets, matting, covers, line hose, gloves, and sleeves made of rubber are required when employees are in areas where there may be exposure to substantial electrical voltage.

AFFECTED SHOPS	WORK TASKS	HAZARDS	TYPES OF PPE
• Electrical • HVAC	High voltage work on switches, transformers, switch gear and other electrical equipment	Electrical shock Arc Flash	➢ **Rubber Gloves with Leather Protectors** ➢ **Rubber Insulating Line Hose** ➢ **Rubber Insulating Mats** ➢ **Lockout/Tagout Devices** ➢ **FR Coveralls**

Insulated Protective Equipment Dielectric Test Schedule

Rubber insulating equipment shall be used/worn to protect employees from shocks/burns while working on "live" electrical systems.

Rubber insulating equipment shall comply with the American Society for Testing and Materials (ASTM) standards. All electrical protective equipment shall be subjected to periodic electrical tests conducted in accordance with appropriate voltages identified by ASTM standards to reliably indicate whether the insulating equipment can withstand the voltage involved. Insulating equipment failing to pass inspections or electrical tests shall NOT be used by employees. A schedule for dielectric testing has been established for the following equipment:

Physical Plant

Electrical Test Schedule for Insulated Protective Equipment

Protective Equipment Description	Mandated Test Interval	Scheduled Month
Rubber Insulated Gloves	6 months[1]	June and December
Rubber Blankets	12 months[1]	August
Mats[2]	n/a	
Fiberglass Rods	24 months	August

[1] *Tested unused gloves, sleeves and blankets may be placed into service within 12 months of the previous tests without retesting.*

[2] *Only needs to be tested by manufacturer, when new.*

All Physical Plant shops using rubber insulating protective equipment shall make the appropriate arrangements for testing of such equipment.

Training Topic: _____

Presented By: _____ **Date:** _____

PRINT NAME	SIGNATURE	SHOP

Procedure No 6
Subject: Hearing Conservation
Reference: CFR1910.95
Distribution All Employees Review Date: February 20, 2009

Purpose:	RSCC to provide guidelines and requirements for the conservation of hearing for employees in which their job may require according to the OSHA Standard CFR 1910.95.

Definition:

Whenever employee noise exposures equal or exceed an 8-hour time weighted average sound level of 85 decibels (dB), RSCC is required to institute a hearing conservation program. The use of hearing protection must be considered as the least alternative for controlling noise levels.

Responsibilities:

RSCC shall make hearing protection available to employees. A variety of hearing protectors shall be available in the Physical Plant. Hearing protectors shall be replaced as necessary.

Supervision for applicable departments is responsible for ensuring and enforcing the required use of hearing protection by employees when sound levels exceed those shown in the following table.

Permissible Noise Exposures

Duration per day	Sound level dBA
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
.5	110
.25 or less	115

Audiometric Testing:

RSCC shall establish and maintain an audiometric testing program as described in 29CFR1910.95 and shall test employees whose exposures equal or exceed an 8-hour time weighted average of 85dB. Audiometric testing shall be provided at no cost to the employee in the Communicative Disorders Department. Testing shall be performed by a licensed or certified Audiologist, Physician or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation.

Each employee's audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a standard threshold shift (STS) as defined by OSHA has occurred. This comparison shall be done by a certified hearing technician/audiologist. If the annual audiogram shows that an employee has suffered an STS, RSCC may obtain a retest within 30 days and consider the results of the retest as the annual audiogram.
The audiologist, otolaryngologist, or physician shall review problem audiograms and determine whether there is a need for further evaluation.

Standard Threshold Shift (STS)

An STS is a change in the hearing threshold level to the baseline audiogram of an average 10dB or more at 2000, 3000, and 4000Hz in either ear. Age correction adjustments may be made to STS's.

Procedure No 7
Subject: Bloodborne Pathogens
Reference: CFR1910.1030
Distribution All Employees Review Date: February 20, 2009

Purpose:	The purpose of this exposure control plan is to eliminate or minimize employee's occupational exposure to blood or other infectious body fluids. Other potentially infectious body fluids include: semen, vaginal secretions, amniotic fluid, saliva in dental procedures, and any body fluid visibly contaminated with blood.

Policy Statement

This plan is designed to eliminate or minimize RSCC employees' potential occupational exposures to bloodborne pathogenic microorganisms, which include, but are not limited to, Human Immunodeficiency Virus (HIV), Hepatitis-B Virus (HBV), and Hepatitis-C Virus (HCV). The HBV virus often leads to life threatening complications that are often fatal.

This plan includes instructions for complying with Tennessee's Sharps Injury Prevention Law, similar to the Federal Needlestick Safety and Prevention Act. Also included are instructions for maintaining the log of needle stick injuries and new TOSHA reporting procedures.

This plan also establishes a new requirement for performing titer determinations in order to evaluate if vaccinated employees are Hepatitis B surface antigen positive.

This plan requires that employees follow universal precautions, which means that all blood and other potentially infectious material (OPIM) must be treated as though they are infected with HIV, HBV and HCV. Each department and clinic must determine whether the plan applies to their personnel by performing an occupational exposure determination. If occupational exposure, as defined by this plan, is present, the department or lab must develop an exposure control plan specific to their exposure. Each plan must address method of implementing engineering controls, work practices, personal protective equipment, housekeeping, HB vaccinations, and training.

Anyone having questions concerning this plan may contact the Health and Safety Office at 882-4565.

This plan also mandates practices and procedures for post-exposure follow-up and recordkeeping.

Specific requirements of this plan include:

- Determination of employee exposure
    - Prescribing procedures which assure the application of Universal Precautions, Engineering Controls and Personal Protective Equipment (PPE)
    - Ensuring proper engineering and work practice controls are followed
    - Providing and ensuring proper personal protective equipment is utilized
    - Assuring proper housekeeping practices are followed

- Providing special protection for individuals working in HIV and HBV research laboratories and product facilities
- Making Hepatitis B vaccination available, at no cost, to potentially exposed employees
- Providing adequate training to all potentially exposed individuals
- Ensuring all actual and potential hazards are appropriately labeled or identified
- Maintaining appropriate prescribed records

This plan complies with the requirements of the OSHA/TOSHA Bloodborne Pathogen Standard. The plan also applies to students and all other individuals who may potentially be exposed to bloodborne pathogens by involvement in College activities.

Application

The plan applies to all RSCC staff, students and guests of the College who may have contact with blood and other potentially infectious materials including semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures and any other body fluid visibly contaminated with blood.

The plan does not apply to feces, nasal secretions, sputum, sweat, tears, urine, vomitus or saliva unless they contain visible blood.

Responsibilities

- **Office of Human Resources**
    - Maintain all medical information/records required by this program for employees identified as having an occupational exposure to blood or other potentially infectious materials.
    - Ensure that the medical portion of employee's personnel records are kept confidential and information not disclosed without the written consent of the employee.

- **Health and Safety Office**
    - Develop and maintain this written College-wide control program and perform annual reviews.
    - Monitor the compliance of the respective departments with the program.
    - Provide guidance and technical assistance to departments in the design and selection of appropriate engineering and work practice controls; the selection of the most appropriate types and quantities of personal protective equipment; and, the development and implementation of appropriate housekeeping methods.
    - Assist departments in fulfilling their training requirements.
    - Review all exposure incidents reports.
    - Provide guidance and assistance with infectious waste handling and disposal.

- **Departments That Have Exposures To Blood or OPIM**
    - The Safety Officer to facilitate implementation of this Program.
    - Ensure that all departmental personnel/positions with Category A and B exposures have been identified.
    - For Category B exposures, identify and document all tasks and procedures in which occupational exposure to bloodborne pathogens might occur.
    - Ensure department is providing all necessary personal protective equipment.
    - Ensure necessary and required training is provided to potentially exposed employees in categories A and B.
    - Encourage employee compliance with the hepatitis B vaccination program.
    - Monitor and enforce compliance with Universal Precautions.

- **Safety Officer**

  - Orient current employees to the infection control program and ensure they are provided HIV, HBV and HCV education.
  - Orient new employees when initially hired to the infection control policies and procedures.
  - Document the orientation and training process with the appropriate forms indicating the date of training sessions, program content and the name of the person completing the training.
  - Compile and maintain data on individuals with potential exposure and the associated tasks and responsibilities of those persons.
  - Maintain all departmental records required by the program and the standard.
  - Develop a program, which ensures that all individuals are provided with the required training within ten (10) days of the commencement of the potential exposure activity. Follow-up training activities are to be provided as necessary to assure that individuals are kept totally current on all necessary protection factors.
  - Provide appropriate personal protective equipment to individuals that have potential exposure.
  - Develop and implement cleaning schedules as deemed appropriate for the types of activities and facilities involved.
  - Assure that universal precautions are understood and followed by individuals with potential exposure.
  - Affix appropriate labels to containers of regulated waste, refrigerators, and freezers containing blood or other potentially infectious materials; and other containers of blood or potentially infectious materials.
  - Assure that Hepatitis B Vaccinations are offered to all applicable individuals.
  - Ensure that individuals who refuse vaccination complete and sign a Hepatitis B Vaccination Declination Form, Appendix 6.
  - Update the program when new information develops or guidelines change and notify employees of changes.
  - Forward the completed copy of the Hepatitis B vaccination record to Health and Safety Office.

- **Employees, Students, and Other Potentially Exposed Individuals**

  - Comply with the provisions of the program and the OSHA requirements.
  - Notify your Department Safety Coordinator or the Safety Officer of activities, which present potential exposure concerns that have not been previously identified.
  - Observe universal precautions when handling blood or other potentially infectious materials.
  - Be aware of engineering controls and the proper use of those controls. Follow established controls to eliminate or minimize potential exposure.
  - Be aware of the proper use, limitations and location of available personal protective equipment. Use appropriate personal protective equipment to eliminate or minimize potential exposure.
  - Be aware of and observe established housekeeping procedures; e.g., use mechanical devices to clean up broken glass in lieu of using bare hands. Maintain work area in a clean and sanitary manner.
  - Understand the additional requirements and protection afforded to employees working with HIV or HBV and follow established procedures.
  - Immediately report to their supervisor any needle sticks or direct blood or body fluid exposure to eyes, skin, mouth, nose, open wound, or abrasion.
  - Attend initial and all other training programs and learn as much as possible about the protection.
  - Receive proper training before initiating work activities involving bloodborne pathogens. Sign in on appropriate training roster during information and training sessions.
  - Make certain that warning labels are appropriately affixed; notify the supervisor or other appropriate College official to report labeling problems.
  - Properly wear all required personal protective equipment.
  - Notify their supervisor of any open wounds or abrasions that might allow disease transmission.

RSCC Employees Protected by This Program

This program applies to all personnel who have contact with blood or other potentially infectious body fluids while involved in College activities. The following categories of individuals are specifically included:

Nurses
Laboratory Personnel
Custodial Personnel
Student Workers
Security Officers
Plumbers
HVAC Personnel
Others (as determined on a case by case basis)
Dentists
X-Ray Technicians
Phlebotomists
Athletic Trainers
Biohazard Waste Handlers
Grounds Personnel
Agricultural Workers

Methods of Compliance

Exposure Determination. Each department affected by the policy must perform an exposure determination concerning which employees may incur occupational exposure to blood or other potentially infectious materials. The exposure determination should be made without regard to the use of personal protective equipment. Occupational exposure is defined as a reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties. This exposure determination requires a listing of all job classifications in which all employees may be expected to incur occupational exposure. Job classifications which are in this category must be listed on the form in Appendix 2.

In addition, TOSHA requires a listing of job classifications in which some employees may have occupational exposure. Since not all the employees in these categories would be expected to incur exposure to blood or other potentially infectious materials, tasks or procedures that would cause these employees to have occupational exposure, are also required to be listed. The job classifications and associated tasks for these categories are listed in Appendix 3. All other job classifications are considered Category C (no exposure) by the standard.

"Good Samaritan" acts are unanticipated events that occur when employees who do not have occupational exposure are exposed to blood to other OPIM (e.g., assisting a person with a nosebleed). These are not included in the scope of this plan.

Each department shall maintain a current record of their job classification determinations and a copy of their department Exposure Control Plan. These determinations should be updated annually or as required for new employees.

Universal Precautions. Universal Precautions embraces the concept of treating all body fluids and materials as infectious. The use of Universal Precautions will be employed in all workplaces with occupational exposures to blood or OPIM. All bodies are considered to contain potentially transmissible pathogens and appropriate barrier techniques must be followed.

Engineering and Work Practice Controls. Supervisors should institute methods or controls to eliminate or minimize exposure to blood or OPIM in the workplace. This can be accomplished by the use of intrinsically safe substances, procedures or devices; substitution for a hazardous procedure to device with one that is less risky or harmful and isolation or containment of the hazard. The following workplace practice controls shall be used to eliminate/reduce employee's exposure to blood or OPIM:

- Hand Washing/Aseptic Technique.
    - Aseptic technique will be observed in the routine performance of all patient care procedures.
    - Hand washing facilities shall be readily available to all employees.

- Employees must wash their hands with soap and water before and after each patient contact, after the removal of gloves and/or other protective clothing and immediately, or as soon as possible, after any hand contact with blood or OPIM.
- When the use of hand washing facilities is not feasible, employees shall either use an appropriate antiseptic cleanser or antiseptic towelette.
- Only non-petroleum based hand cream should be used when wearing protective gloves.

- Sharps Containers.

  - Sharps containers shall be closable, puncture resistant, labeled or color-coded in accordance with the TOSHA Standard and leak proof on the sides and bottom.
  - During use, containers for contaminated sharps must be accessible to personnel and located close to the immediate area where sharps are used. Containers should be kept upright and replaced before they are completely filled.
  - Sharp containers must be closed when being moved.
  - Reusable sharps that are contaminated with blood or OPIM shall not be stored or processed in a manner that requires employees to reach by hand into the containers where these sharps have been placed.

  - General Practices.

    - Eating, drinking, smoking, applying cosmetics or lip balm or handling contact lens are prohibited in all work areas where there is a reasonable likelihood of occupational exposures.
    - Food and drink shall not be kept in refrigerators, freezers, shelves, counters or bench tops where blood or OPIM are present.
    - All procedures involving blood or OPIM shall be performed in such a manner as to minimize splashing, spraying, splattering and generation of droplets of these substance.
    - Mouth pipetting/suctioning of blood or others potentially infectious materials is prohibited.
    - Specimens of blood or OPIM shall be placed in a container, which prevents leakage during collection, handling, processing, storage, transport or shipping.

  - Regulated Waste Handling and Storage Procedures. Containers for regulated waste shall be:

    - Closable, and constructed to contain all contents and prevent leakage of fluids during handling, storage, transport and shipping.
    - Puncture resistant, labeled or color-coded in accordance with the TOSHA Standard.
    - Closed prior to removal or replacement. Containers shall be placed in a secondary container if leakage is possible or contamination of the outside container occurs.

Sharps Injury Prevention

- Sharps Handling Procedures.

  - Sharps and needles shall be handled, stored, and disposed of in a manner that protects employees and other personnel from occupational exposure to bloodborne pathogens.
  - Contaminated needles and other contaminated sharps shall not be bent, recapped or removed unless the department can demonstrate that no alternative is feasible or that such action is required by a specific medical procedure. Shearing or breaking of contaminated needles is prohibited.
  - Recapping or needle removal must be accomplished through the use of a mechanical device or a one-handed technique.
  - Immediately or as soon as possible after use, contaminated reusable sharps shall be placed in appropriate containers until properly reprocessed.

- Safer Needle Devices

  - Departments and labs must consider and incorporate into their practices innovations in medical procedures, devices and technological developments that reduce the risk of exposure (e.g., newly available medical devices designed to reduce needle sticks).
  - Departments and labs must document consideration and use of appropriate, commercially available, and effective safer devices (e.g., describe the devices identified as candidates for use, the method(s) used to evaluate those devices, and justification for the eventual selection).
  - Since no one medical device is considered appropriate or effective for all circumstances, selection should be based on reasonable judgment.
  - Devices selected should not jeopardize patient or employee safety or be medically inadvisable.
  - Non-managerial employees responsible for direct patient care must be involved with the identification, evaluation, and selection of effective engineering controls, including safer medical devices. Employees selected should represent the range of exposure situations encountered in the workplace.
  - Employee involvement must be documented in departmental plans. This obligation can be met by listing the employees involved and describing the process by which input was requested; or presenting other documentation, including reference to meeting minutes, or records of responses received from employees.

Personal Protective Equipment

- When there is identified potential occupational exposures, the department shall provide, at no cost to the employee, appropriate personal protective equipment, such as, but not limited to, gloves, gowns, face shields, laboratory coats, masks, eye protection, mouthpieces, resuscitation bags, etc.

- Personal protective equipment will be considered appropriate only if it does not permit blood or OPIM to pass through to or reach the employee's work clothes, street clothes, undergarments, eyes, mouth or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.

- All personal protective equipment shall be cleaned, laundered or disposed of at no expense to the employee.

- All personal protective equipment shall be repaired or replaced as needed to maintain its effectiveness, at no expense to the employee.

- If a garment(s) is penetrated by blood or OPIM, the garment(s) shall be removed immediately or as soon as feasible.

- All personal protective clothing shall be removed prior to leaving the work area.

- When personal protective clothing is removed, it shall be placed in an appropriately designated area or container marked with a biohazard label. Removal should be performed in a manner to avoid contact with the outer cover.

- The use of masks and protective eyewear is required when contamination of mucosal membranes (eyes, mouth, or nose) with body fluids (such as splashes or aerosolization of such material) is likely to occur. They are not required for routine activities where splashes or aerosolization is extremely unlikely.

- The use of gowns or aprons is required when splashes to skin or clothing of body fluids are likely to occur. Gowns or aprons shall be made of, or lined with, impervious material.

- Surgical caps or hoods and/or shoe covers or boots shall be worn in instances when gross contamination can be reasonably anticipated.

- Gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood or OPIM, mucous membranes, non-intact skin or when handling or touching contaminated surfaces.

- Disposable gloves shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured or when their ability to function as a barrier is compromised.

- Disposable gloves shall not be washed or decontaminated for reuse.

- Utility gloves may be decontaminated for reuse if their integrity is not compromised. They must be discarded when their ability to function as a barrier is compromised.

- Gloves shall be of appropriate materials, intact latex or intact vinyl of appropriate quality for the procedures performed and of appropriate size for each wearer. Gloves shall not be washed or disinfected for re-use. Gloves are not a substitute for proper hand washing. Hands are to be washed using warm water and liquid soap immediately after removing gloves.

- No gloves shall be used if they are peeling, cracking or discolored of if they have punctures, tears or other evidence of deterioration.

- The use of disposable gloves is indicated for procedures where body fluids are handled. Wearing gloves is particularly important in the following situations:

    - If the individual handling the material has cuts, abraded skin, chapped hands, dermatitis or similar conditions;
    - During instrumental examination which has the possibility of causing bleeding or release of other body fluids;
    - When contacting abraded or non-intact skin of individuals with active bleeding or drainage;
    - During invasive procedures; and
    - During all cleaning and documentation procedures.

- Gloves shall be worn when performing all phlebotomies.

Housekeeping, Cleaning and Disinfection

All equipment, environmental, and working surfaces shall be properly cleaned and disinfected with an appropriate germicide or a 1:10 dilution of sodium hypochlorite after:

- Completion of Procedures
- When surfaces are overtly contaminated
- Immediately after any spill of blood or OPIM
- At the end of the work shift

All bins, pails, cans, and similar receptacles intended for re-use which have the potential for becoming contaminated with blood or OPIM shall be inspected, cleaned, and disinfected daily and as soon as possible upon visible contamination.

Broken glassware, which may be contaminated, shall not be picked up by hand. It shall be picked up using a brush, dustpan and/or tongs. Vacuum cleaners should not be used for these procedures.

Re-usable items contaminated with blood or OPIM will be decontaminated prior to washing and/or re-processing.

Equipment which may become contaminated with blood or other potentially infectious materials shall be examined prior to service or shipping and shall be decontaminated as necessary.

Infectious wastes and sharps containers are incinerated through contracted medical waste services. This waste is designated by red-bag/container or biohazard label. Infectious waste shall be placed in contaminated waste containers, which are constructed to prevent leakage, appropriately labeled and lined with a red bag. Red bags are placed in a secondary container, which is constructed to prevent leakage and appropriately labeled for transport and disposal.

Clean up/disinfection shall be done using an approved germicide or a 1:10 dilution of sodium hypochlorite. Personnel shall wear gloves and other PPE as appropriate at all time during the clean up procedures. In general, spill clean-ups include:

- Absorbing the spill
- Diluting with a detergent
- Disinfecting the area
- Reabsorbing the material
- Rinsing
- Drying

Clothing grossly contaminated with a body fluid is removed and placed in a leak-proof container prior to laundering. Personnel handling contaminated laundry will wear protective gloves and gowns and other PPE as appropriate during handling and sorting to minimize contact with blood or OPIM.

Laundry

Contaminated laundry shall be handled as little as possible with a minimum of agitation.

Contaminated laundry shall be bagged or containerized where used without being sorted or rinsed.

Whenever the contaminated laundry is wet and presents a reasonable likelihood of soak-through or leakage, the laundry shall be placed in a bag or container that prevents leakage of fluids to the exterior.

Employees who have contact with contaminated laundry shall wear protective gloves and other appropriated personal protective equipment.

Contaminated laundry shall be placed and transported in appropriate labeled bags.

Hepatitis B Vaccination

The College will make the Hepatitis B vaccination series available to all current and new employees who have occupational exposure after those employees have received appropriate training and within 10 working days of initial assignment at no cost to the employee unless:

- The employee previously received the vaccination series,
- Antibody testing determines immunity, or
- Vaccination is medically contraindicated.

Employees claiming one of these exemptions need to have documentation supporting the exemption in the medical record.

If an employee declines to accept the Hepatitis B Vaccination, the employee shall sign the Hepatitis B Vaccination Declination Statement. Employees who initially decline the Hepatitis B Vaccine may decide at a later date to receive it. Such employees may receive the vaccine at a reasonable time and place at no charge, provided that they are still working at tasks involving occupational exposure.

Exposure Incident Evaluation Procedures

Following a report of an exposure incident, the medical facility providing the patient care shall file a confidential medical evaluation and follow-up and make it available to the affected employee.

Communication of Hazard to Employees

Warning labels shall be affixed to containers of regulated waste, refrigerators and freezers containing blood or OPIM; and other containers used to store, transport or ship blood or OPIM, with the following exceptions:

- Red bags or red containers may be substituted for labels.

- Containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use are exempted from the labeling requirements.

- Individual containers of blood or OPIM that are placed in a labeled container during storage, transport, shipment or disposal are exempted from the labeling requirement.

- Labels required shall include the following legend:

- These labels shall be fluorescent orange-red or predominately so, with lettering or symbols in a contrasting color.

- Labels required shall be affixed as close as feasible to the container by string, wire, adhesive or other method that prevents loss or unintentional removal.

- Labels required for contaminated equipment shall also indicate which portions of the equipment remains contaminated.

- Regulated waste that has been decontaminated need not be labeled or color-coded.

Recordkeeping and Documentation

- Sharps Injury Log

    - Department Safety Coordinators must maintain a log of sharps injuries that occur in their departments.
    - Information in this log must remain **confidential**.
    - Log should contain information describing the type and "brand" of instrument involved in the incident, department work area where the injury occurred and an explanation of what happened.
    - Copies of sharps injuries must be forwarded to the Health and Safety Office and Human Resources.

The College shall establish and maintain in the Office of Human Resources a confidential medical record for each employee who has an occupational exposure incident.

Employee's medical records will be kept confidential and are not disclosed or reported without the employee's expressed written consent to any person within or outside the workplace except as required by law.

Medical records will be made available upon request for examination and copying to employees or to employee's representatives.

Records will be maintained for at least the duration of the employee's employment, plus 30 years.

Training

All employees with an occupational exposure to blood or OPIM shall participate in a training and education program, which will be provided at no cost to the employee.

Training will be tailored to be appropriate in content and vocabulary to the educational level, literacy, and language of audience's background.

The training shall consist of the following components:

- An accessible copy of the Federal and/or State Law governing bloodborne pathogens.
- A general explanation of the epidemiology and symptoms of bloodborne diseases.
- An explanation of the modes of transmissions of bloodborne pathogens.
- An explanation of the RSCC, and the Departmental Bloodborne Pathogen Exposure Control Programs, identification of where copies of the Program are located and how the employee may obtain a copy of the Programs.
- An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and OPIM.
- An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment.
- Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment.
- An explanation of the basis for selection of personal protective equipment.
- Information on the hepatitis B vaccine, including safety, method of administration, the benefits of being vaccinated and vaccination and that the vaccine and vaccination will be offered free of charge.
- Information on the appropriate actions to take and persons to contact in an emergency involving blood or OPIM.
- An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- Information on the post-exposure evaluation and follow-up that the College is required to provide to the employee.
- An explanation of the labels and/or color-coding used to identify infectious materials.
- An opportunity for interactive questions and answers with the person(s) conducting the training session.
- The person(s) conducting the training shall be knowledgeable in the subject matter covered.

Information and training shall be conducted:

- At the time of the initial assignment of tasks where occupational exposure may occur.
- When the employee is assigned to perform or is exposed to new tasks, which may affect the employee's risk.
- Annually for all employees within one year of their previous training.

Department Safety Coordinators shall maintain training records for three years from the date of the training session. Training records shall include the following information:

- Date of the training session.
- The contents or summary of the training session.
- The names and qualifications of persons conducting the training.
- The names and job titles of all persons attending the training.

Appendix 1

Definitions

- **Administrative Controls**. Formal procedures established to ensure that Category I and II tasks are properly identified, SOPs are developed and employees who perform these tasks are adequately trained and protected.

- **Blood**. Human blood, human blood components and products made from human blood.

- **Bloodborne Pathogens**. Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus, and human immunodeficiency virus.

- **Clinical Laboratory**. A workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

- **Contaminated**. The presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

- **Contaminated Laundry**. Laundry that has been soiled with blood or other potentially infectious materials or may contain sharps.

- **Contaminated Sharps**. Any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes and exposed ends of dental wires.

- **Decontamination**. The use of physical or chemical means to remove, inactivate or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use or disposal.

- **Engineering Controls**. Controls (e.g., sharps disposal containers, self-sheathing needles, safer medical devices, such as sharps with engineered sharps injury protections and needleless systems) that isolate or remove the bloodborne pathogens hazard from the workplace.

- **Exposure Incident**. A specific eye, mouth, other mucous membrane, non-intact skin or parenteral contact with blood or other potentially infectious materials that results from the performance of employee's duties.

- **Fluid Resistant**. Material that resists moisture restricts blood and other fluids strike through.

- **Hand washing Facilities**. A facility providing an adequate supply of running potable water, soap, and single use towels or hot air drying machines.

- **HBV**. Hepatitis B virus.

- **HIV**. Human immunodeficiency virus.

- **Impervious**. Not permitting passage of a substance.

- **Licensed Healthcare Professional**. A person whose legally permitted scope of practice allows them to independently perform the activities required.

- **Needleless Systems**. Devices that does not use needles for (1) the collection of fluids or withdrawal of body fluids after initial venous or arterial access is established; (2) the administration of medication or fluids; or (3) any other procedure involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps.

- **Occupational Exposure**. Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

- **Other Potentially Infectious Materials (OPIM)**. 1). The following body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids. 2). Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and 3). HIV containing cell or tissue cultures, organ cultures, and HIV or HBV containing culture medium or other solutions and blood, organs, or other tissue from experimental animals infected with HIV or HBV.

- **Parenteral**. Piercing mucous membrane or the skin barrier through such events as needle sticks, human bites, cuts and abrasions.

- **Personal Protective Equipment**. Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts, or blouses) not intended to function as protection against a hazard is not considered to be personal protective equipment.

- **Regulated Waste**. Liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood of other potentially infectious materials.

- **Source Individual**. Any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients, clients of drug and alcohol treatment facilities, human remains, and individuals who donate or sell blood or blood components.

- **Sharps with Engineered Sharps Injury Protections**. A nonneedle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.

- **Sterilize**. The use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

- **Tennessee Occupational Safety and Health Administration (TOSHA)**. The State of Tennessee' regulatory agency for safety in the workplace.

- **Universal Precautions**. An approach to infection control where <u>all</u> human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV and other bloodborne pathogens.

- **Work Practice Controls**. Controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two handed technique).

Appendix 2

Exposure Determination by Job Classification

List each job classification in the work place. Classify each job by placing an "X" under the exposure category which best describes the position without regard to the use of personal protective devices.

Category A: Involved tasks or procedures in which all or some employees have a reasonable likelihood of contact with blood or other potentially infectious materials (OPIM). The use of job-appropriate personal protective equipment and other protective measures is required. (Example: Physicians, Physician's Assistants, Nurses, Clinical and Diagnostic Lab Personnel, Housekeepers).

Category B: Tasks and work assignments involve no routine exposure to blood or other potentially infectious materials, but employment may require unplanned Category A tasks... (Example: Receptionist, Office Manager).

Category C: Tasks and work assignments involve no exposure to blood or other potentially infectious materials. Employment NEVER requires Category A or Category B task or duties. No personal protective equipment in needed.

JOB CLASSIFICATION	CATEGORY A Tasks involve exposure to blood and OPIM.	CATEGORY B Tasks involve no routine exposure to blood or OPIM, but may require unplanned Category A tasks.	Category C Tasks and Assignments Require No Exposure to Blood or OPIM.

Appendix 3

Exposure Determination by Tasks and Duties

List all tasks, or groups of tasks/procedures, performed by employees that present a reasonable likelihood of exposure to blood or other potentially infectious materials--without regard to the use of personal protective devices. (Example: Handling of contaminated sharps, handling contaminated linen, handling regulated wastes, collecting blood specimens).

Task/Group of Tasks/Procedures	Performed by

Appendix 4

Resheathing/Recapping Of Clean and Contaminated Needles

Needles should be used and immediately discarded, un-capped, into accessible sharps containers. Certain circumstances may exist, however, in which recapping, bending, or removing needles is necessary. In these situations the user must be able to demonstrate that:

- The action is required by a specific medical procedure.
- Recapping must be performed by some method other than the traditional two-handed procedure.
- No alternative, such as immediately discarding used needles into accessible and appropriate sharps container, is feasible.

The use of the properly performed one-hand scoop method (in which the hand holding the sharp is used to scoop up the cap from a flat surface) for recapping is a recognized and acceptable method.

The resheathing, recapping, bending or breaking of needles is prohibited except in situations where it is absolutely necessary for appropriate job performance.

The following is a list of acceptable reasons for the appearance of resheathed needles in the sharps containers:

Clean Needles

- With use of medication that may cause "tracking" in the tissue (tissue irritation), a new needle is placed on the syringe after the medication is drawn up.
- When changing needle gauge sizes.
- When diluting medication from a carpuject, the needle and cap are removed from carpuject and discarded.
- When procedure trays are used there may be extra capped needles remaining on tray.
- When giving medication via a stopcock port or an IV line, the medication is drawn up and the needle then discarded prior to medication delivery.
- Unused prepared solution with needle attached.
- When drawing up liquid medications and other non-contaminated solutions in a syringe, the needle and cap are removed and discarded.
- When changing from a standard needle to a filtered needle.
- When a needle and syringe is unpackaged by mistake and not used.
- When using needle and syringe for repeated administration of non-contaminated solutions in the laboratory setting. This pertains only to experiments that do not include living subjects or potentially contaminated materials such as work with living microorganisms.

Contaminated Needles

- Giving PRN IV medications, the doses may be titrated. The needle is recapped and the balance of the medication may be administered on a PRN basis for up to one hour.
- After medication delivery is completed via an INT needle, the needle on the primary line is recapped, discarded and a new-capped needle replaced on the primary line.
- When changing needles on a secondary IV set, the needle is capped and discarded and a new-capped needle is placed on the set.
- When a needle becomes contaminated, the needle may be recapped and discarded and a sterile needle placed on the syringe.

- When a patient brings in a capped contaminated syringe into a clinic after self-administration of medication.
- After Arterial Blood Gases are obtained, the syringe is recapped via the one-hand technique. The capped contaminated needle is then disposed of prior to running the test.
- Needles are removed from Vacutainer holders for disposal using a one-handed method along with a mechanical device.
- Scalpel blades are removed from handles using a mechanical device (hemostat).

Appendix 5

Five Basic Questions

Employees will be asked these five basic questions by a TOSHA inspector when determining if a facility is in compliance with the training section of the Bloodborne Pathogen Standard.

1. What does "Universal Precautions" mean?
2. What do you do when there is a blood spill?
   - Personal protection
   - Clean-up and disposal
   - Disinfection (apply hazard communication standard)
3. What do you do with contaminated sharps and laundry?
4. Have you been offered the hepatitis vaccination free of charge?
5. Where is the "Exposure Control Plan" and has it been explained to you, and have you been trained?

Hepatitis B Vaccination and Titer Record

Name: _____ Dept. _____ Resp. Account ☐ RSCC ☐ COM

Date of Birth: _____ SSN: _____ Phone #: _____

Part A: Health Care Professional's Written Opinion for Hepatitis B Vaccination

Date of Office Visit: _____ Health Care Facility: _____

Do you have any contraindication to baker's yeast or to a previous dose of hepatitis B vaccine?
Yes ☐ No ☐

Hepatitis B vaccination is ☐ is not ☐ recommended for this employee.

_____ _____
Signature of Health Care Provider Print/Type Name Of Health Care Provider

Part B: Vaccination Schedule

HVB Vaccinate Date	Administered By	Comments

Second Series if Necessary

HBV Vaccinate Date	Administered By	Comments

Hepatitis B Titer – Anti-Hepatitis B Surface Antigen		
Date Scheduled:	Date Taken:	Sufficient ☐ Insufficient ☐
Results of Second Titer – If Necessary		
Date Scheduled:	Date Taken:	Sufficient ☐ Insufficient ☐

Part C: HBV Vaccine Declination

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B virus, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive a vaccination series at no charge to me.

_____ _____
Employee's Signature Date

Procedure No 8
Subject: Respiratory Protection
Reference: CFR1910.134
Distribution All Employees Review Date: February 20, 2009

Purpose:	The Occupational Safety and Health Administration's (OSHA) respiratory protection standard, 29 CFR 1910.134 requires that a respiratory protection program be established in the workplace to effectively control employee exposures to respiratory hazards.

POLICY

It is the policy of RSCC to provide employees with a safe and healthful work environment. This respiratory protection program is designed to help reduce employees' exposures against occupational dusts, fogs, fumes, mists, gases, smokes, sprays or vapors. The primary objective shall be to prevent atmospheric contamination and to prevent employee exposure to airborne contaminants. This is accomplished, as far as feasible, by accepted engineering and work practice control measures. When effective engineering controls are not feasible, or while they are being implemented or evaluated, respiratory protection may be required to achieve this goal. In these work situations, respiratory protection, training and medical evaluations are provided at no cost to the employees.

RESPONSIBILITIES/ASSIGNMENTS

Management

Management is responsible for providing respiratory protection equipment that is applicable and suitable for the purpose of minimizing employees' exposures to airborne hazards. Management shall ensure this program is fully implemented and maintained and will take appropriate actions to modify or revise the program as workplace conditions change or new respiratory hazards are introduced. Engineering and administrative controls are considered by management to minimize exposure to atmospheric hazards and respiratory protection is provided as a last resort.

The RSCC Health and Safety Coordinator will administer this Respiratory Protection Program. This program is designed and organized to ensure respirators are properly selected, used, and maintained by personnel and to comply with OSHA's Respiratory Protection Standard.

The RSCC Health and Safety Office is responsible for evaluating those tasks for which respiratory protection is thought to be necessary, determine the degree of hazard posed by the potential exposure, determine whether engineering or administrative controls are feasible, and specify which respiratory protection device is best suited for each task. In addition, the Health and Safety Officer will train personnel in the selection and use of respiratory protection devices; conduct respirator fit tests, instruct respirator wearers in proper cleaning and storage methods.

Supervisors

Supervisors will ensure that each employee under his or her supervision that has been issued a respirator has received appropriate training and has completed an annual medical evaluation. Supervisors will ensure the availability of appropriate respirators and accessories, provide adequate storage facilities, and encourage proper respirator equipment maintenance. Supervisors must be aware of tasks requiring the use of respiratory protection, and ensure all employees engaged in such work use the appropriate respirators at all times.

Supervisors are responsible for observing work area conditions and report any atmospheric changes or work area conditions that have the potential to affect respirator effectiveness. Supervisors shall report their findings to the Health and Safety Office as soon as possible so that respirator selection can be re-evaluated.

Respirator Wearers

It is the responsibility of each respirator wearer to wear his/her respirator when and where required and in the manner in which they were trained. Respirator wearers must report any malfunctions of the respirator to his/her supervisor immediately. The respirator wearer must also guard against mechanical damage to the respirator, clean the respirator as instructed, and store the respirator in a clean, sanitary location.

Contractors

Contractors are required to have a respiratory protection program for their employees who must enter into or work in areas where exposure to hazardous materials cannot be controlled or avoided. Contractor's programs must meet OSHA regulations and include issuance of respirators, medical evaluations, fit testing and training.

MEDICAL EVALUATION

Every employee who is considered for inclusion in the RSCC Respiratory Protection Program shall participate in a medical evaluation. Medical evaluations will be performed by a physician or other licensed health care professional (PLHCP) initially upon implementation of this policy, new hires into a job classification requiring respiratory protection, or change into a job classification requiring respiratory protection. See *Attachment A,* Table-1 to view the list of respirator wearers.

RSCC employees listed as respirator wearers shall fill out the "Medical Questionnaire for Respirator Users" and receive a baseline spirometry to be performed by a PLHCP. A copy of the "Medical Questionnaire for Respirator Users" is included in *Attachment B.*

The medical questionnaire will be administered confidentially during the employee's normal working hours. **The questionnaire cannot be returned to a supervisor or any other RSCC employee.** The medical questionnaire must be returned to the PLHCP after it has been completed or handed to the PLHCP at the time of the scheduled spirometry. The employee may discuss the questionnaire and examination results with the PLHCP.

The PLHCP shall review the answers to the medical questionnaires and consider the results of the spirometry to reach a decision about the physical status of the employee and their ability to wear a respirator. The PLHCP will provide a written recommendation regarding each employee's ability to use a respirator. The written recommendation shall provide only the following information pursuant to 29 CFR 1910.134.

1) Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;

2) The need, if any, for follow-up medical evaluations; and

3) A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

If a medical restriction is applied, the employee, his/her supervisor, Vice President of Financial Services and the Health and Safety Office will be formally notified of the restriction.

A follow-up medical examination may be necessary for the PLHCP to make a medical determination about the employee's ability to wear a respirator. **A follow-up medical examination will be provided for an employee who gives a positive response to any questions 1 through 8 in Section 2, Part A of the "Medical Questionnaire for Respirator Users"**. Follow-up medical examinations will include any medical tests, consultations or diagnostic procedures that the PLHCP deems necessary to make a final determination.

Respirator wearers will be medically evaluated annually. Annual medical evaluations will be accomplished using the "Medical History Review" form in *Attachment C*.

SELECTION AND USE OF RESPIRATORY PROTECTION

Respirator Selection

The Health and Safety Office will advise management and employees authorized to wear respirators in the selection of the appropriate respirator, filters and cartridges. A hazard assessment has been performed and identifies the certain tasks/hazards that require a specific respirator (See *Attachment A*, TABLE-2). The list is not entirely inclusive. For this reason, resources are available to the Health and Safety Office for selecting the appropriate respirator to protect against airborne hazards. They include: ANSI Z88.2, NIOSH Certified Equipment List, NIOSH Respirator Decision Logic, respirator manufacturer's literature and *Attachment D (Respirator Selection Worksite Specific Procedure).*

Issuance of Respirators

Respiratory protection is authorized and issued for the shops and personnel listed in *Attachment A*, TABLE-1.

Examples of work which may require the use of respirators include, but are not limited to:

- Asbestos abatement activities
- Abrasive sandblasting
- Cutting, scraping or stripping lead-based paints from surfaces
- Welding
- Painting, especially with epoxy or organic solvent coatings
- Using solvents, thinners, or degreasers
- Any work which generates large amounts of dust
- Mold remediation

The types of respirators available to employees vary. Descriptions of the various respirator types are included in *Attachment E*.

Respiratory protection shall not be ordered, purchased, or issued to personnel unless the Health and Safety Office has approved the respirator type. The Health and Safety Office will verify that the respirator wearer is approved by the Vice President of Financial Services and that a medical evaluation is completed. New employees who require respiratory protection equipment shall be integrated into the program pursuant to the requirements of this respiratory protection policy.

Procedures for IDLH Environment

RSCC does not currently have trained SCBA emergency IDLH responders. Please contact Health and Safety Office at 882-4565 or 911 for IDLH situations.

COMPRESSED AIR SYSTEMS

RSCC does not use compressors to supply breathing air to respirators.

RESPIRATOR TRAINING

Respirator users and their supervisors will receive training on the contents of the Respiratory Protection Program and their responsibilities under it. They will be trained on the proper selection and use, as well as the limitations of the respirator. Training also covers how to ensure a proper fit before use and how to determine when a respirator is no longer providing the protection intended.

The Health and Safety Officer along with Human Resources will provide out-sourced training for respirator wearers in the use, maintenance, capabilities, and limitations of respirators prior to tasks requiring the use of respirators. Retraining is given annually thereafter and only upon successful completion of the medical evaluation.

RESPIRATOR FIT TESTING AND FACEPIECE SEAL PROTECTION

A respirator fit test shall determine the ability of each individual respirator wearer to obtain a satisfactory fit. Employees must successfully pass the respirator fit test before an air-purifying respirator is issued.

RSCC employees are not permitted to wear a respirator in a work situation until he or she has demonstrated that an acceptable fit can be obtained. Fit tests shall be conducted annually.

Fit testing will be performed, when necessary, by a physician or other licensed health care professional (PLHCP) contracted by RSCC.

Respirator fit-tests shall be documented and shall include the type of respirator, brand name and model, method of test and test results, test date and the name of the instructor/tester (*See Attachment F*).

No attempt is made to fit a respirator on an employee who has facial hair which comes between the sealing periphery of the facepiece and the face, or if facial hair interferes with normal functioning of the exhalation valve of the respirator.

Facial Hair

RSCC shall not permit respirators with tight-fitting face pieces to be worn by employees who have facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function; or any condition that interferes with the face-to-facepiece seal or valve function; and

Eyeglasses, Goggles, and other PPE

Eyeglasses, goggles, and other personal protective equipment shall be worn by employees in a manner that does not interfere with the respirator sealing surface.

User Seal Checks

RSCC employees are required to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. User seal checks are not substitutes for qualitative or quantitative fit tests.

A. *Positive pressure check.* Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

B. *Negative pressure check.* Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

MAINTENANCE, CLEANING AND STORAGE

Maintenance

The maintenance of respirators involves a thorough visual inspection for cleanliness and defects (i.e., cracking rubber, deterioration of straps, defective exhalation and inhalation valves, broken or cracked lenses, etc.). Worn or deteriorated parts shall be replaced. Respirators reported to have defects are taken out of service and another respirator is reissued. No attempt is made to replace components, make adjustments or make repairs on any respirator beyond those recommended by the manufacturer. Repair to valves, regulators, or alarms will be conducted by either the manufacturer or a qualified trained technician.

Cleaning of Respirators

All respirators in routine use shall be cleaned and sanitized on a periodic basis. Respirators used non-routinely shall be cleaned and sanitized after each use and filters and cartridges replaced. Routinely used respirators are maintained individually by the respirator wearer. Replacement cartridges and filters are provided as needed.

RSCC employees are advised in proper cleaning of their respirators in accordance with OSHA's recommended cleaning procedures. An alternative to OSHA's recommended cleaning procedures are the cleaning recommendations provided by the manufacturer of the respirators used by employees, provided such procedures are as effective as those that follow. Equivalent effectiveness simply means that the procedures used must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

I. Procedures for Cleaning Respirators

A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure- demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

B. Wash components in warm (110° F maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

C. Rinse components thoroughly in clean, warm (110° F maximum), preferably running water. Drain.

D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:

   1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 110° F; or,

   2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 110° F; or,

   3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

E. Rinse components thoroughly in clean, warm (110° F maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

F. Components should be hand-dried with a clean lint-free cloth or air-dried.

G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

H. Test the respirator to ensure that all components work properly.

Storage

After inspection, cleaning, and any necessary minor repairs, store respirators to protect against sunlight, heat, extreme cold, excessive moisture, damaging chemicals or other contaminants. Routinely used respirators, such as half-mask or full-face air-purifying respirators, shall be placed in sealable plastic bags. Respirators may be stored in such places as lockers or tool boxes only if they are first placed in sealable plastic bags. Respirators shall be packed or stored so that the facepiece and exhalation valves will rest in a normal position and not be crushed.

SCBAs for emergency use shall be stored in sealed compartments built for that purpose, shall be quickly accessible at all times and will be clearly marked.

PROGRAM EVALUATION

To ensure that this written respiratory protection program is effectively implemented, RSCC management requests that respirator wearers submit their complaints and/or recommendations to improve this respiratory protection in writing. To facilitate this request, a form has been developed and is included as *Attachment G*.

RSCC management and the Health and Safety Office will convene to review the matter and assess employee views on program effectiveness and seek to identify any problems that they may be encountering with the use of respirators. If it is determined, based on the facts presented, that employee complaints are valid and the recommendations presented on the form can improve the respiratory protection program, the respiratory protection policy will be revised and dated to reflect changes.

Employees will be notified of any policy changes and training, if necessary, will be provided.

RECORDKEEPING

The following records shall be maintained to comply with OSHA regulations:

Record	**Location**
PLHCP Clearance Records	Physical Plant Main Office (Employee File)
Medical Records of a Confidential Nature	Human Resources Physical Plant Main Office (Employee File)
Training Records	Health and Safety Office
Written Respiratory Protection Program and SOPs	Physical Plant Health and Safety Office RSCC Website
Hazard Evaluations (Air sampling results, surveys, respirator selection records)	Health and Safety Office
Fit Test Records	Health and Safety Office
Program Evaluations	Physical Plant Main Office Health and Safety Office

VOLUNTARY USE OF RESPIRATORS BY EMPLOYEES

Some employees may express a desire to voluntarily wear respirators during certain tasks/operations that do not require respiratory protection. The only respirator that is approved for voluntary use specifically for comfort purposes is the filtering facepiece (dust mask). RSCC's Health and Safety Officer must be consulted to determine that voluntary use of a dust mask will not in itself create a hazard.

The respirator user shall be provided with the information contained in *Appendix H* ("Information for Employees Using Respirators When Not Required Under the Standard").

DEFINITIONS

The following definitions are important terms used in the respiratory protection program.

- Air-purifying respirator means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- Atmosphere-supplying respirator means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.
- Canister or cartridge means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
- End-of-service-life indicator (ESLI) means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.
- Filtering facepiece (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- Fit test means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)
- Immediate danger to life or health (IDLH) means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
- Loose-fitting facepiece means a respiratory inlet covering that is designed to form a partial seal with the face.
- Negative pressure respirator (tight fitting) means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
- Physician or other licensed health care professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by 29 CFR 1910.134
- Positive pressure respirator means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
- Powered air-purifying respirator (PAPR) means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
- Qualitative fit test (QLFT) means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- Quantitative fit test (QNFT) means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- Self-contained breathing apparatus (SCBA) means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
- Supplied-air respirator (SAR) or airline respirator means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
- Tight-fitting facepiece means a respiratory inlet covering that forms a complete seal with the face.

TABLE-1 (Crafts and Staff Issued NIOSH Approved Respirators)

DESIGNATED DEPARTMENTS TO WEAR RESPIRATORY PROTECTION	
HVAC	
Electrical	
Paint Shop	
Boiler Room	
Grounds	
Agriculture Center	
Preventive Maintenance	
Health and Safety	

TABLE-2 (Hazard Assessment and Respirator Selection)

HAZARD	**RESPIRATOR TYPES**
Asbestos Abatement	• Half-mask, air-purifying respirator with N100 filters • Full-face, air-purifying respirator with N100 filters • Full-face, powered air-purifying respirator with N100 filters
Application of epoxy- or oil-based paints (Indoors)	• Half-mask, air-purifying respirators with organic vapor filters • Full-face powered air-purifying respirator with organic vapor cartridges
Lead-based paint removal	• Half-mask, air-purifying respirators with N100 filters • Full-face, air-purifying respirators with N100 filters • Full-face, powered air-purifying respirators with N100 filters
Use of pesticides, herbicides, and rodenticides	• Full-face or half-mask, air-purifying respirator with combination particulate and pesticide/organic vapor cartridges • Full-face, powered air-purifying respirator with combination particulate and pesticide/organic vapor cartridges
Refrigerant – HVAC Chiller Plant Alarm	• Full-face, Self Contained Breathing Apparatus
Welding - Enclosed Space, Poor Ventilation	• Half-mask, air-purifying respirator with N100 filters • Filtering Facepiece, N100
Mold remediation	• Half-mask, air-purifying respirator with N95 filters or P95 filters • Filtering Facepiece, N95 < 10 ft^2
Sand blasting operations	• Half-mask, air-purifying respirators with N100 filters • Full-face, air-purifying respirators with N100 filters

ATTACHMENT B

Confidential Medical Questionnaire for Respirator Users
RSCC Respiratory Protections Program

Employee's Name: _____ Date: _____

Home address: _____ Department/Shop: _____

_____ Address: _____

Home Phone #: _____ Work Phone #: _____

Date of Birth: ____/____/____ Age: _____ Job Title: _____

College ID#: _____ Number of Years Worked for the Department: _____

Your Supervisor must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your supervisor must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory)
The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. **Sex (circle one): Male / Female** 2. **Your height: _____ ft. _____ in.**

3. **Your weight: _____ lbs.**

4. Is it okay for the health care professional who reviews this questionnaire to contact you at one of the telephone numbers listed above? Yes ☐ No ☐

   If No is checked, please list the telephone number where you can be reached. _____

5. What is the best time to reach you at this number:

6. Has your supervisor told you how to contact the health care professional who will review this questionnaire? Yes ☐ No ☐

7. Check the type of respirator you will use (you can check more than one category):
   a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
   b. _____ Half- or full-facepiece air-purifying type
   c. _____ Powered-air purifying, supplied-air
   d. _____ Self-contained breathing apparatus (SCBA)

8. Have you worn a respirator? Yes ☐ No ☐
   If "yes," what type(s):
   a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
   b. _____ Half- or full-facepiece air-purifying type
   c. _____ Powered-air purifying, supplied-air
   d. _____ Self-contained breathing apparatus (SCBA)

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator.

(please circle "Yes" or "No")

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes No
   a. If yes, what quantity (how many cigarettes per day)? _____
   b. If you did smoke tobacco and quit, how long has it been since you last smoked? _____

2. Have you ever had any of the following conditions?
   a. Seizures (fits): Yes No
   b. Diabetes (sugar disease): Yes No
   c. Allergic reactions that interfere with your breathing: Yes No
   d. Claustrophobia (fear of closed-in places): Yes No
   e. Trouble smelling odors: Yes No

3. Have you ever had any of the following pulmonary or lung problems?
   a. Asbestosis: Yes No
   b. Asthma: Yes No
   c. Chronic bronchitis: Yes No
   d. Emphysema: Yes No
   e. Pneumonia: Yes No
   f. Tuberculosis: Yes No
   g. Silicosis: Yes No
   h. Pneumothorax (collapsed lung): Yes No
   i. Lung cancer: Yes No
   j. Broken ribs: Yes No
   k. Any chest injuries or surgeries: Yes No
   l. Any other lung problem that you've been told about: Yes No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?
   a. Shortness of breath: Yes No
   b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes No
   c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes No
   d. Have to stop for breath when walking at your own pace on level ground: Yes No
   e. Shortness of breath when washing or dressing yourself: Yes No
   f. Shortness of breath that interferes with your job: Yes No
   g. Coughing that produces phlegm (thick sputum): Yes No
   h. Coughing that wakes you early in the morning: Yes No
   i. Coughing that occurs mostly when you are lying down: Yes No
   j. Coughing up blood in the last month: Yes No
   k. Wheezing: Yes No
   l. Wheezing that interferes with your job: Yes No
   m. Chest pain when you breathe deeply: Yes No
   n. Any other symptoms that you think may be related to lung problems: Yes No

5. Have you ever had any of the following cardiovascular or heart problems?
   a. Heart attack: Yes No
   b. Stroke: Yes No
   c. Angina: Yes No
   d. Heart failure: Yes No
   e. Swelling in your legs or feet (not caused by walking): Yes No
   f. Heart arrhythmia (heart beating irregularly): Yes No
   g. High blood pressure: Yes No
   h. Any other heart problem that you've been told about: Yes No

6. Have you ever had any of the following cardiovascular or heart symptoms?
   a. Frequent pain or tightness in your chest: Yes No
   b. Pain or tightness in your chest during physical activity: Yes No
   c. Pain or tightness in your chest that interferes with your job: Yes No
   d. In the past two years, have you noticed your heart skipping or missing a beat: Yes No
   e. Heartburn or indigestion that is not related to eating: Yes No
   f. Any other symptoms that you think may be related to heart or circulation problems: Yes No

7. Do you currently take medication for any of the following problems?
   a. Breathing or lung problems: Yes No
   b. Heart trouble: Yes No
   c. Blood pressure: Yes No
   d. Seizures (fits): Yes No

8. If you've used a respirator, have you ever had any of the following problems?
   (If you've never used a respirator, go to question 9:)
   a. Eye irritation: Yes No
   b. Skin allergies or rashes: Yes No
   c. Anxiety: Yes No
   d. General weakness or fatigue: Yes No
   e. Any other problem that interferes with your use of a respirator: Yes No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire? Yes No

Part B.

1. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals, or have you come into skin contact with hazardous chemicals? Yes No
   If "yes," circle or name them:
   a. Asbestos: Yes No
   b. Silica (e.g., in sandblasting): Yes No
   c. Lead: Yes No
   d. Pesticides: Yes No

e. Glues and Adhesives: Yes No
f. Clandestine Drug Labs: Yes No
g. Dusty Environments: Yes No
h. Other:_____

_____

2. List any second jobs or side businesses you have:_____

_____

3. List your previous occupations:_____

_____

4. Have you ever worked on a HAZMAT team? Yes No
5. Other than medications mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes No

If "yes," name the medications if you know them:_____

_____

(Part B Continued)

6. How often are you expected to use the respirator(s) (<u>circle "Yes" or "No" for all answers that apply to you</u>)?:
   a. Escape only (no rescue): Yes No
   b. Emergency rescue only: Yes No
   c. Less than 5 hours per week: Yes No
   d. Less than 2 hours per day: Yes No
   e. 2 to 4 hours per day: Yes No
   f. Over 4 hours per day: Yes No

7. During the period you are using the respirator(s), is your work effort:
   a. *Light:* Yes No
   If "yes," how long does this period last during the average shift:_____hrs._____mins.

   Examples of a ***<u>light work</u>*** effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

   b. *Moderate:* Yes No
   If "yes," how long does this period last during the average shift:_____hrs._____mins.

   Examples of ***<u>moderate work</u>*** effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. *Heavy* Yes No

If "yes," how long does this period last during the average shift:_____hrs._____mins.

Examples of ***heavy work*** are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

8. Will you be working under hot conditions (temperature exceeding 77 deg. F): Yes No

9. Will you be working under humid conditions: Yes No

10. Describe the work you'll be doing while you're using your respirator(s):_____

_____

_____

11. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

_____

_____

_____

Part C. **(Full-Facepiece Respirators and SCBAs)**

Questions 1 to 6 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

1.	Have you ever lost vision in either eye (temporarily or permanently):	Yes	No
2.	Do you currently have any of the following vision problems?		
	a. Wear contact lenses:	Yes	No
	b. Wear glasses:	Yes	No
	c. Color blind:	Yes	No
	d. Any other eye or vision problem:	Yes	No
3.	Have you ever had an injury to your ears, including a broken ear drum:	Yes	No
4.	Do you currently have any of the following hearing problems?		
	a. Difficulty hearing:	Yes	No
	b. Wear a hearing aid:	Yes	No
	c. Any other hearing or ear problem:	Yes	No
5.	Have you ever had a back injury:	Yes	No
6.	Do you currently have any of the following musculoskeletal problems?		
	a. Weakness in any of your arms, hands, legs, or feet:	Yes	No
	b. Back pain:	Yes	No
	c. Difficulty fully moving your arms and legs:	Yes	No
	d. Pain or stiffness when you lean forward or backward at the waist:	Yes	No
	e. Difficulty fully moving your head up or down:	Yes	No
	f. Difficulty fully moving your head side to side:	Yes	No
	g. Difficulty bending at your knees:	Yes	No
	h. Difficulty squatting to the ground:	Yes	No
	i. Climbing a flight of stairs or a ladder carrying more than 25 lbs:	Yes	No
	j. Any other muscle or skeletal problem that interferes with using a respirator:	Yes	No

CERTIFICATION: I certify that I have provided true and complete information concerning my health.

_____ _____

Employee Signature Date

Medical History Review

NAME:_____ DATE:_____
(Print)
CRAFT:_____

1. Have you developed any medical problems or symptoms that may limit your ability to use a respirator? (*If YES, please describe the symptoms or problem*.) Yes ___ No ___

2. Have you been treated for a heart or lung condition in the past year? (*i.e., heart attack, pneumonia*) Yes ___ No ___

3. Have you been under treatment by a physician for any other condition in the past year? (*If YES, please describe the condition.)* Yes ___ No ___

4. Have you had any surgical operation or medical procedure in the past year? (*If YES, please describe the procedure.)* Yes ___ No ___

5. Has there been a change in workplace conditions, e.g., physical work effort, protective clothing, temperature, that has resulted in a substantial increase in the physical burden on you? (*If YES, please describe the condition.)* Yes ___ No ___

_____ _____
Employee Signature ***Date***

_____ _____
PLHCP Signature ***Date***

Respirators will be selected according to the following procedure.

1. SELECTION

Respirator selection involves reviewing each operation to (a) determine what hazards may be present (hazard determination) and (b) select which type or class of respirators can offer adequate protection.

2. HAZARD DETERMINATION STEPS

The nature of the hazard shall be determined as follows:

a) If the potential for an oxygen-deficient environment exists, measure the oxygen content;

b) Determine what contaminant(s) may be present in the workplace;

c) Determine whether there is a published Threshold Limit Value, Permissible Exposure Limit, or any other available exposure limit or estimate of toxicity for the contaminant(s). Determine if the IDLH concentration for the contaminant is available;

d) Determine if there is a comprehensive health standard (e.g. lead, asbestos) for the contaminant(s). If so, there may be specific respirators required that would influence the selection process;

e) Determine the physical state of the contaminant. Determine if vapor pressure of the aerosol is significant at the maximum expected temperature of the work environment;

f) Measure or estimate the concentration of the contaminant(s);

g) Determine whether the contaminant(s) present can be absorbed through the skin, produce skin sensitization, or be irritating or corrosive to the eyes or skin;

h) Determine for a gas or vapor contaminant(s) if a known odor, taste, or irritation concentration exists.

i) Determine for a gas or vapor contaminants: 1) if a chemical cartridge with an end-of-service-life indicator (ESLI) exists or 2) if service life data exists for chemical cartridges that might be used.

3. SELECTION STEPS

The proper respirator shall be selected as follows:

a) If there is an oxygen-deficient atmosphere, the type of respirator selected depends on the partial pressure (altitude) and concentration of oxygen and the concentration of the other contaminant(s) that may be present; go to (f) and 3.1.1 through 3.1.2;

b) If unable to determine what potentially hazardous contaminant may be present, the atmosphere shall be considered IDLH; go to 3.1;

c) If no exposure limit or guideline is available, and estimates of the toxicity cannot be made, the atmosphere shall be considered IDLH; go to 3.1;

d) If the exposure level cannot be identified or reasonably estimated, the atmosphere shall be considered IDLH; go to 3.1;

e) If a specific standard exists for the contaminant, consider those guidelines/requirements;

f) If the measured or estimated concentration of the contaminant(s) is considered IDLH; go to 3.1;

g) Divide the measured or estimated concentration of each contaminant by the exposure limit or guideline to obtain a hazard ratio. When two or more substances are present, consider if there is a synergistic or combined effect of exposure rather than considering each substance individually. Select a respirator from among those with an assigned protection factor greater than the value of the hazard ratio listed in TABLE-3. If an air-purifying respirator is under consideration, continue with (h);

h) If the contaminant(s) is a gas or vapor only, go to (m).

i) If the contaminant is an aerosol; and a specific regulation or regulatory policy does not require a Class 100 filter, select a Class 95 filter. Go to step (j);

j) If the contaminant is an oil or oil mist is present in the air, or if the presence of oil is unknown, go to (k). If no oil is present, go to (l);

k) If the filter will be used for more than 8 hours or for more than 200 mg of loading, select a respirator with a P filter. If not, a respirator with either an R or P filter is acceptable

l) If no oil mist is present, select a respirator with either N, R, or P filters;

Note: A powered air-purifying respirator with an appropriate APF and a high efficiency filter may be selected in lieu of particulate respirators selected using steps (i) through (l).

m) If the contaminant is a gas or vapor, select an airline respirator unless:

1) an air-purifying respirator with an end-of-service-life indicator for the contaminant is available or,

2) a change schedule based on service life information or other objective data is implemented to ensure that canisters and cartridges are changed before the end of their service life.

3.1 SELECTION OF RESPIRATORS FOR ATMOSPHERES IMMEDIATE DANGER TO LIFE OR HEALTH, FOR USE IN CONFINED SPACES, OR REDUCED-PRESSURE ATMOSPHERES

3.1.1 RESPIRATORS FOR USE UNDER IDLH CONDITIONS AT NORMAL ATMOSPHERIC CONDITIONS

The required respiratory protection for IDLH conditions caused by the presence of toxic materials or a reduced percentage of oxygen as described in conditions (a), (b), or (c) in 3.1.2 is a:

- positive-pressure SCBA (with a service of 30 min or more) or
- a combination of a supplied-air respirator with auxiliary SCBA. If the SCBA is 5, 10 or 15 min in service life, the airline mode must be used for entry into the atmosphere.

3.1.2 ATMOSPHERES IMMEDIATE DANGER TO LIFE OR HEALTH

A location is considered IDLH when:

a) it is an atmosphere known or suspected to have concentrations above the IDLH level, or

b) it is a confined space that contains less than the normal 20.9% oxygen, unless the source of the oxygen reduction is understood and controlled, or

c) oxygen content is below 19.5%. Exception: If the employer demonstrates that under all foreseeable conditions, the oxygen concentration can be maintained within the ranges specified in the following table (i.e., for the altitudes set out in the table), then any atmosphere supplying respirator (airline or SCBA) may be used.

Oxygen deficient atmospheres for which the employer may rely on any atmosphere-supplying respirators

Altitude (ft.)	($\%O_2$)
< 3,001	16.0 - 19.5
3,001 - 4,000	16.4 - 19.5
4,001 - 5,000	17.1 - 19.5
5,001 - 6,000	17.8 - 19.5
6,001 - 7,000	18.5 - 19.5
7,001 - 8,000*	19.3 - 19.5

* Above 8,000 feet the exception does not apply. Oxygen enriched breathing air must be supplied above 14,000 feet.

TABLE-3 -ASSIGNED PROTECTION FACTORS FOR RESPIRATOR SELECTION

RESPIRATORY INLET COVERING

TYPE OF RESPIRATOR	Half Mask[1]	Full Facepiece
Air purifying	10	50
Atmosphere supplying		
SCBA(demand)[2]	10	50
Airline (demand)	10	50

RESPIRATORY INLET COVERING

TYPE OF RESPIRATOR	Half Mask	Full Face	Helmet/ Hood	Loose-fitting Facepiece
Powered air purifying	50	1000[3]	1000[3]	25
Atmosphere supplying				
• Airline-				
- pressure demand	50	1000	-	-
- continuous flow	50	1000	1000	25
• Self-contained				
- breathing apparatus				
- pressure demand open/closed circuit	-	(4)	-	-

(1) Includes quarter-masks, disposable half-masks, and half-masks with elastomeric facepieces.
(2) Demand SCBA shall not be used for emergency situations such as fire fighting.
(3) Protection factors listed are for high-efficiency filters and sorbents (cartridges and canisters). With dust filters, an assigned protection factor of 100 is to be used due to the limitations of the filter.
(4) Although positive-pressure respirators are currently regarded as providing the highest level of respiratory protection, a limited number of recent simulated workplace studies concluded that all users may not achieve protection factors of 10,000. Based on this limited data, a definitive assigned protection factor could not be listed for positive-pressure SCBAs. For emergency planning purposes, where hazardous concentrations can be estimated, an assigned protection factor of no higher than 10,000 should be used.

NOTE: Assigned protection factors are not applicable for escape respirators. For combination respirators, e.g. airline respirators equipped with an air-purifying filter, the mode of operation in use will dictate the assigned protection factor to be applied.

*See ANSI Z88.2 Standard for specific selection details.

A. **Air-Purifying Respirator**

These respirators remove air contaminants by filtering, absorbing, adsorbing, or chemical reaction with the contaminants as they pass through the respirator canister or cartridge. This respirator is to be used only where adequate oxygen (19.5 to 23.5 percent by volume) is available. Air-purifying respirators can be classified as follows:

1. Particulate removing respirators, which filter out dusts, fibers, fumes and mists. These respirators may be single-use disposable respirators or respirators with replaceable filters.

   NOTE:Surgical masks do not provide protection against air contaminants. They are never to be used in place of an air-purifying respirator. They are for medical use only.

2. Gas- and vapor-removing respirators, which remove specific individual contaminants or a combination of contaminants by absorption, adsorption or by chemical reaction. Gas masks and chemical-cartridge respirators are examples of gas- and vapor-removing respirators.

3. Combination particulate/gas- and vapor-removing respirators, which combine the respirator characteristics of both kinds of air-purifying respirators.

B. **Supplied-Air Respirators**

These respirators provide breathing air independent of the environment. Such respirators are to be used when the contaminant has insufficient odor, taste or irritating warning properties, or when the contaminant is of such high concentration or toxicity that an air-purifying respirator is inadequate. Supplied- air respirators, also called air-line respirators, are classified as follows:

1. **Demand** - This respirator supplies air to the user on demand (inhalation) which creates a negative pressure within the facepiece. Leakage into the facepiece may occur if there is a poor seal between the respirator and the user's face.

2. **Pressure-Demand** - This respirator maintains a continuous positive pressure within the facepiece, thus preventing leakage into the facepiece.

3. **Continuous Flow** - This respirator maintains a continuous flow of air through the facepiece and prevents leakage into the facepiece.

C. **Self-Contained Breathing Apparatus (SCBA)**

This type of respirator allows the user complete independence from a fixed source of air and offers the greatest degree of protection but is also the most complex. Training and practice in its use and maintenance is essential. This type of device will be used in emergency situations only.

RESPIRATOR ASSIGNMENT AND FIT TEST RECORD

EMPLOYEE NAME:	**DEPARTMENT:**	**DATE:**
JOB DESCRIPTION:		
CONTAMINANTS: **Dust** **Fumes** **Mists** **Bioaerosols** **Vapors** **Other: _____**		
RESPIRATOR TYPE:		
FIT TEST RESULTS: **SATISFACTORY** **UNSATISFACTORY**		
REMARKS:		

PERSON CONDUCTING FIT TEST

EMPLOYEE'S NAME

Recommendation to Improve the Respiratory Protection Program

This form has been developed to comply with the program evaluation provisions in 1910.134(l) and establishes a systematic approach that documents employees' complaints and suggestions and the actions management takes to assess program effectiveness. The following factors are considered pursuant to 1910.134(l):

- *Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);*
- *Appropriate respirator selection for the hazards to which the employee is exposed;*
- *Proper respirator use under the workplace conditions the employee encounters; and*
- *Proper respirator maintenance.*

1. The following problems have been encountered while using the respirators issued:

_____

_____

_____

2. Suggestions to correct the problems described above and improve the overall effectiveness of the respiratory protection program:

_____

_____

_____

Sign and submit this form to RSCC Health and Safety Officer

Submitted By:_____ _____
Employee *Date*

Received:_____ _____
Health and Safety Officer *Date*

*ACTIONS TAKEN:*_____

_____

_____

Copies: *Employee*
Vice President of Financial Services
File

VOLUNTARY USE OF RESPIRATORS

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Emergency Response Plan

The College has developed a separate stand alone Emergency Response Plan. The document can be found on the RSCC Health and Safety website.

Procedure No 10
Subject: Asbestos
Reference: 29CFR1910.1001 and 40CFR763
Distribution All Employees Review Date: February 20, 2009

Purpose:	To ensure compliance with federal and state regulations and to minimize the potential exposure of asbestos to students, faculty, staff and the public.

Background:
Asbestos is the name given to a number of naturally occurring, fibrous silicate minerals used as an acoustic insulator, in thermal insulation, fire proofing and other building materials. Asbestos is made up of microscopic bundles of fibers that may become airborne when asbestos containing materials (ACM) are damaged or disturbed. When these fibers get into the air they may be inhaled into the lungs.

Categories of Asbestos Containing Material (ACM):

Friable ACM means any material which contains more than 1 percent asbestos and can be crumbled, pulverized, or reduced to powder by hand pressure.

Non-friable ACM means any material which contains more than 1 percent asbestos and cannot be pulverized under hand pressure.

Training:
RSCC personnel involved in asbestos abatement work, inspecting, or supervising asbestos workers shall receive initial and annual training required by regulations. Maintenance and custodial staff are required to receive Asbestos Awareness training annually.

Surveys and Sampling:
Health and Safety Office is responsible for the sampling and analysis of suspect asbestos material. Analysis of sampling will be kept on file in the Health and Safety Office.

Encountering Asbestos or Suspect Asbestos:
Contractors, maintenance personnel, and individuals performing work at RSCC are responsible for ceasing operations once asbestos containing materials or suspect materials are encountered or disturbed. The Health and Safety Office will evaluate to determine the appropriate response.

Abatement:

Certified RSCC personnel may conduct the removal of asbestos if the work involves less than 160 square feet or 260 linear feet. All work will be coordinated to insure minimal exposure to students, faculty, staff and the public. Certified personnel must receive approval from THE HEALTH AND SAFETY OFFICE prior to any abatement activities and must complete an Asbestos Removal Tracking Form for all abatement work. This completed form must be submitted to the Health and Safety Office monthly. All abatement work will follow the guidelines using appropriate methods. In some cases, removal of asbestos may not be necessary or be the best response action.

Campus renovation projects involving asbestos abatement will utilize certified asbestos abatement contractors. Abatement monitoring shall include air sampling inside and outside containment, and clearance sampling. Clearance air sample results will be communicated to and sent to the Health and Safety Office before occupancy.

Disposal:

Certified asbestos abatement workers will mark the bags appropriately for disposal. Certified asbestos contractors will dispose of asbestos to the landfill as required by EPA and DOT regulations. Once disposed, the contractor is required to send the manifest to the Health and Safety Office.

Procedure Number: 11
Subject: Refrigerant Management
Reference: 40 CFR Part 82
Distribution: All Employees Review Date: February 20, 2009

Purpose	The purpose of this refrigerant management compliance plan is to establish guidelines to be followed when equipment containing ozone depleting refrigerants are serviced or repaired in all RSCC facilities.

Overview

Roane State Community College (RSCC) owns appliances and equipment that contain ozone-depleting refrigerants that are subject to the federal stratospheric ozone protection regulations. The Protection of Stratospheric Ozone; Refrigerant Recycling Final Rule can be read in its entirety at 40 CFR Part 82, U.S. EPA. As a result of the Clean Air Act requirements, the EPA has established a national recycling program for these substances when recovered during the servicing and disposal of refrigeration and air conditioning equipment.

Scope

This policy applies to all RSCC employees, outside contractors and their representatives, or any company representative hired by RSCC to provide refrigeration services or any outside trade workers who will be working on College property as it pertains to ozone depleting refrigerants.

Responsibilities of Facilities Management

- Must comply with EPA Section 608 National Recycling and Emission Reduction Program regulations.
    - Reference the following EPA web pages:
        - http://www.epa.gov/oar/caa/caa608.txt
        - http://www.epa.gov/Ozone/title6/608/608fact.html
- Leak repair and service provisions apply to connected-refrigerant-circuit with a circuit capacity of 50 pounds or more refrigerant.
- Service technicians are responsible to maintain their EPA Approved Testing Certification.
- Service technicians must perform refrigerant service only on appliances with refrigerants, recovery equipment, recycling equipment, and refrigerant cylinders for which they are certified.
- When handling appliances with refrigerants, recovery equipment, recycling equipment, and refrigerant cylinders, service technicians must have their "certification cards" at all times.

- Facilities must provide its technicians with good working recovery and recycling equipment as a tool for recovering or recycling refrigerants.
- When opening, servicing, repairing, and disposing of appliances with refrigerants, service technicians must have at least one self-contained recovery equipment or recycling equipment at all times.
- All appliances with refrigerants, recovery equipment, recycling equipment, and refrigerant cylinders shall be clean and leak free.
- The service technician is responsible to maintain all appliances with refrigerants, recovery equipment, recycling equipment, and refrigerant cylinders in good working condition.
- Preventive maintenance shall be performed on the appliances with refrigerants, recovery equipment, recycling equipment, and refrigerant cylinders as required.
- Oils extracted during service should be kept, marked and disposed of separate from other oils. Contact the Physical Plant for disposal of all wastes.
- Each refrigerant cylinder shall be marked for identification purposes.
- Refrigerants of different types shall not be mixed with one another.
- The Health and Safety Officer will provide training on the requirements of this policy to all service technicians and supervisors who are involved with refrigerant services.
- The supervisors will make sure a copy of this policy is available to all service technicians who will perform refrigerant services.

EPA Technician Certification:

As per the Clean Air Act Amendments Section 608, the four types of certifications for stationary equipment are as follows:

Type of equipment serviced	Level of required certification
Small equipment (<5lbs)	Type I
High and very-high pressure equipment	Type II
Low pressure equipment	Type III
All types	Type IV Universal*

* Type IV Universal does not include automobile air conditioning systems.

For more details on technician certification refer to the following EPA web pages:

- http://www.epa.gov/ozone/title6/608/608fact.html#techcert
- http://www.epa.gov/ozone/title6/608/technicians/index.html

Evacuation Requirements:

Service technicians must evacuate air-conditioning and refrigeration appliances as per EPA Section 608 Refrigerant Recycling Rule.

Required Levels of Evacuation for Appliances (Except for Small Appliances, MVACs, and MVAC-like Appliances)**

Type of appliance serviced	Inches of mercury vacuum using equipment manufactured*	
	Before Nov. 15, 1993	On or after Nov. 15, 1993
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 pounds of refrigerant.	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing 200 pounds or more of refrigerant.	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing less than 200 pounds of refrigerant (CFC-12, -500, -502, -114).	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing 200 pounds or more of refrigerant (CFC-12, -500, -502, -114).	4	15
Very High Pressure Appliance (CFC-13, -503).	0	0
Low-Pressure Appliance (CFC-11, HCFC-123).	25	25mm Hg absolute

* Relative to standard atmospheric pressure of 29.9 inches of Hg.

**Reference: http://www.epa.gov/ozone/title6/608/608evtab.html

For more details on evacuation requirements refer to the following EPA web pages:http://www.epa.gov/ozone/title6/608/608fact.html#servreqs

Refrigerant Leaks

Pursuant to EPA Section 608, appliances with refrigerant charges of greater than 50 pounds are required to be repaired when leaks in the equipment would result in the loss of more than a certain percentage of the appliance's charge over a year. For the commercial and industrial process refrigeration sectors, leaks must be repaired when the appliance leaks at a rate that would release 35 percent or more of the charge over a year. For all other sectors, including comfort cooling, leaks must be repaired when the appliance leaks at a rate that would release 15 percent or more of the charge over a year. Preventive maintenance shall be performed to test for leak integrity.

Leaks must be repaired within 30 days of discovery. If Facilities develops a one-year retrofit or retirement plan for the leaking unit, then the 30 days repair requirement is waived. Industrial process refrigeration appliances requiring an industrial process shutdown qualify for 120 days to repair a leak.

For more details on refrigerant leaks refer to the following EPA web pages:

- http://www.epa.gov/ozone/title6/608/608fact.html#leaks
- http://www.epa.gov/ozone/title6/608/leak.html

Safe Disposal

All appliances with refrigerants, recovery equipment, recycling equipment, and refrigerant cylinders must be disposed of as per the "Safe Disposal Requirements of EPA Section 608". Refrigerants must be removed from equipment and appliances prior to disposal. Once refrigerants are removed from the appliances for disposal, the service technician must spray paint "EMPTY" on the appliance so the Grounds Department can confirm that any appliances designated for scrap metal recycling are empty and approved for metal recycling.

For more details on safe disposal refer to the following EPA web page:

- http://www.epa.gov/ozone/title6/608/608fact.html#disposal

Labeling

As per Air Conditioning and Refrigeration Institute Guidelines, all refrigerant containers of class I or class II substances must be labeled:

"WARNING: Contains CFC/HCFC, a substance which harms public health and environment by destroying ozone in the upper atmosphere."

Record keeping

- **Physical Plant Personnel:**
  - Maintenance Supervisors must keep detailed technical information on every appliance which contains 50 or more pounds of refrigerants that is maintained and serviced by the Physical Plant.
  - Technicians must keep a copy of their proof of certification at the Physical Plant.
  - Technicians must document on the Physical Plant Work Order the type of service, the date of service, and the quantity of refrigerant added. The documentation must also be signed and dated by the technician(s) performing the work.

- If appliances with refrigerants, recovery equipment, recycling equipment, and refrigerant cylinders are not functioning or are not in good working condition or need to be repaired, it is the responsibility of the technician to report it on the Physical Plant Work Order.
- The Maintenance Supervisor will submit all completed Work Orders to the Health and Safety Officer on a monthly basis.
- The Maintenance Supervisor has the responsibility to complete all applicable sections of the Refrigeration Equipment Recovery and Disposal Log (*Attachment A*) for each work order completed. *Attachment A* must be submitted to Health and Safety Officer on a monthly basis.
- For disposal of appliances (even if the disposal is performed by a non-RSCC entity or person), it is the responsibility of the Maintenance Supervisor to document disposal details (i.e., refrigerant recovered, appliance to be disposed of, etc.) on the Refrigeration Equipment Recovery and Disposal Log.
- The Maintenance Supervisor must document records of refrigerant purchased documenting the name of the seller, date of purchase, and the type and quantity of refrigerant purchased. A copy of this information must be attached to their monthly report.
- The Maintenance Supervisor must keep records of all materials sent for reclamation documenting the names and addresses of the reclaimer, and the quantity of material sent to them for reclamation. A copy of this information must be attached to their monthly report.
- Maintenance Supervisors must maintain documentation (i.e., service records) on leak repair and leak rate calculations. Leak repairs must be documented on the Physical Plant Work Order.
- Maintenance Supervisors must provide documentation to the Health and Safety Officer when new recycling or recovery equipment is purchased.
- Health and Safety Officer will provide equipment information to the EPA Regional Office when Facilities has acquired (built, bought, or leased) recovery or recycling equipment.
- The Physical Plant will keep a copy of each technician's proof of certification.
- All required records will be maintained for three years.

REFRIGERATION EQUIPMENT RECOVERY and DISPOSAL LOG

Tank #	Freon Type	Date	Technician	Weight Include tank	Lbs Used	Lbs Recovered	Bldg/ Room	Equipment (also note if equip. was disposed of)	Serial Number of Equip.	Freon Recycling (Note date and reclamation company exchanged cylinder with)

Procedure No 12
Subject: Permit Policy
Reference: OSHA CFR1910.1030 and NFPA 51B
Distribution All Employees Review Date: February 20, 2009

Purpose:	This is a management policy/program for controlling hazards associated with various types of work. The Permit Policy has been established to identify certain types of work activities that require prior authorization before work can proceed. It also identifies controls (i.e. personal protective equipment) required to perform the work safely.

Scope: This policy requires that RSCC Physical Plant and College employees complete the applicable permits and follow all requirements identified in the permit system. Failure to comply with this policy is grounds for disciplinary action in accordance with RSCC's Disciplinary Policy.

Responsibilities: This policy applies to all RSCC shops and maintenance workers.

a. Supervisor Responsibilities: Supervisors are responsible for authorizing permits and verifying all requirements are met before work can proceed. Responsible for verifying trained individuals will be performing work. Responsible for submitting completed permits to Health and Safety upon completion of the work.

b. Employee Responsibilities: Responsible for stopping work and notifying supervision of the required permit(s). Responsible for following all requirements specified on the permit(s).

c. Health and Safety Responsibilities: Implement Permit Policy and support affected supervisors and employees. Train employees in both the proper identification of work requiring the permit system and permit compliance. Provide safety related data associated with the identified work.

Work Activities Requiring Permits:

1) HOT OR LIVE ELECTRICAL WORK: **Any activities that require work to be performed on equipment that is in an electrically energized state will require this permit system.** Diagnostics or troubleshooting live equipment < 480 volts (i.e. verifying equipment is isolated with a properly rated volt meter) does not require the permit system, but will only be performed by trained electricians and trained HVAC personnel with the appropriate PPE. **All 480 volts and greater, whether diagnostic or live work, will require this permit system.** Only the Maintenance Supervisor or Director level has the authority to approve the permit. When a permit is required, check the box for Live Electrical Work and verify by checking all of the appropriate boxes of Attachment A. Finally the Maintenance Supervisor or Director level must sign before work can proceed.

EVERY EFFORT MUST BE MADE TO ISOLATE THE ELECTRICAL ENERGY SOURCE BY MEANS OF LOCKOUT/TAGOUT FOLLOWING RSCC's LOCKOUT/TAGOUT POLICY.

No live electrical work will be authorized unless deemed absolutely necessary.

2) WORK ON CHEMICAL, RADIOLOGICAL AND BIOLOGICAL HOODS, REFRIGERATORS, AND DRAINS: Any work on chemical, radiological or biological hoods that require work to be performed inside the hood or on the hood ducting where there is an exposure potential. Complete this section for work on refrigerator/freezers containing chemical, radiological, or biological materials. Also complete this section for drain/plumbing work where you suspect harmful chemical or biological materials could be present. When a permit is required, check the box for Chemical, Radiological, and Biological Hoods, Refrigerators, or Drains and verify by checking all boxes in this section. You must call the Health and Safety Officer at 882-4565 to complete this section. The Health and Safety Officer will give guidance on the required personal protective equipment and any other applicable safety information.

3) HOT WORK: Any activity that could produce flames, sparks, slag, or other hot fragments that might act as an ignition source to flammable materials in the area. Hot Work also includes any activity that could generate sufficient smoke or heat to activate a fire alarm detection system. It includes, but is not limited to: welding, cutting, torch soldering, brazing, heat treating, pipe thawing, and grinding. Too often, persons who use, hire, or supervise these processes do not fully appreciate that improper use and lack of fire safeguards can result in loss of life and property by fire and explosion. Cutting and certain arc welding processes produce thousands of ignition sources in the form of sparks and hot slag. These globules of molten metal have scattered horizontally as far as 35 feet, setting fire to all kinds of combustible materials.

This section of the permit policy is a management system for controlling the fire hazards of hot work operations. The Hot Work Permit has been established to prevent unintended ignition of combustible and flammable materials. The use of portable hot work equipment must be controlled to prevent fires. Outside contractors performing repair and alteration work are of particular concern since they are not familiar with our College buildings or processes, and may not be supervised closely. Hot work done outside of a fixed facility should comply with NFPA 51B, *Standard for Fire Prevention During Welding, Cutting and Other Hot Work*, and require the use of a Hot Work Permit. When a permit is required, check the box for Hot Work and proceed to the back of the form and verify by checking all boxes in this section. Finally, sign as the person authorizing the permit as well as identify the person performing the fire watch.

Hot Work Organizational Assignments/Responsibilities:

This applies to all RSCC shops and vendors/contractors who perform welding, cutting and other hot work on RSCC properties.

The Supervisor of the shop performing welding, cutting and other hot work tasks shall review procedures for each Hot Work Permit form submitted and sign the Permit as applicable. *Approval of the Hot Work Permit by the Health and Safety Officer or his/her designee is required prior to the start of the hot work.*

RSCC Project Managers shall review welding, cutting and other hot work locations proposed by vendors and contractors for applicability of this policy. Project Managers are responsible for advising contractors/vendors about the Hot Work Permit procedures for the purpose of recognizing, evaluating and controlling hot work hazards on campus. A representative of the contractor or vendor must complete the Hot Work Permit and submit as described above.

Each individual performing welding or cutting and any hot work activity defined below shall ensure precautions have been taken as prescribed in the Hot Work Permit form prior to commencing any work. *The Hot Work Permit form shall be submitted to the Physical Plant office* ***at least 24 hours*** *prior to commencing any hot work in areas not approved for hot work.*

Permissible Hot Work Areas

Cutting, welding and other hot work shall be permitted only in areas that are or have been made fire safe. Assuming hot work is necessary (See *Alternatives to Hot Work*), the first step is to determine if the work can be done in a designated or approved hot work area. A designated area is a specific area designed or approved for hot work.

Areas Not Requiring Hot Work Permits - Areas that not subject to a Hot Work Permit include:

- Welding and Cutting Shops; and
- Detached outdoor areas that are free of flammable and combustible materials (i.e., dry brush, grass, leaves) and is suitably separated from adjacent areas.

Prohibited Hot Work Areas

If hot work cannot be accomplished in an approved hot work area, there is a need to determine whether hot work is prohibited altogether. Sometimes an area simply cannot be made safe for cutting, welding or any other hot work and shall not be permitted. Some examples of prohibited hot work situations are as follows:

- Where processes involving flammable liquids, gases and dusts cannot be shut down and made safe;
- Where lint conditions are severe beyond correction;
- On partitions, walls, ceilings, or roofs with combustible coverings (e.g., expanded plastic insulation);

- On pipe or other metals that can conduct enough heat to ignite nearby combustibles;
- In the presence of explosive atmospheres (e.g., mixtures of flammable gases, vapors, liquids, or dusts with air);
- In sprinklered buildings while such protection is impaired;
- In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, rolled paper, or cotton; and
- In areas not authorized by management.

Hot Work Fire Watch Requirements

A fire watchers job is to monitor the area and watch for fires from the hot work operation and to make sure that persons not involved in the hot work operation do not come into or move combustible or flammable materials in to the work zone during the hot work operation.

Fire watchers shall be required by the individual responsible for authorizing the hot work wherever hot work is performed in locations that a minor fire might develop, or where:

- Appreciable combustible materials in building construction or contents are closer than 35 ft. (11 m) to the point of operation;
- Appreciable combustibles are more than 35 ft. (11 m) away but are easily ignited by sparks;
- Wall or floor openings within a 35 ft. (11 m) radius expose combustible material in adjacent areas, including concealed spaces in walls or floors;
- Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by heat conduction or radiation.

Fire watchers shall have a fully charged and operable fire extinguisher or other extinguishing method available. In either case, the fire watcher will be trained to use the fire extinguishing equipment.

Fire watchers shall be familiar with facilities and procedures for sounding an alarm in the event of a fire.

Fire watchers shall watch for fires in all exposed areas, and try to extinguish them first only when obviously within the capacity of the equipment available, or otherwise sound the alarm immediately.

A fire watch shall be maintained for at least 30 minutes after completion of cutting, welding and other hot work operations to detect and extinguish smoldering fires.

If the individual conducting the fire watch must leave the area momentarily (to use the restroom, retrieve parts or tools from a service vehicle, etc.), they must arrange to have someone else take over the fire watch responsibility during the time they are away.

Alternatives to Hot Work

- Manual sawing versus cutting;
- Manual filing, versus mechanical grinding; and
- Using a threaded, bolted, or clamped connection versus a soldered or welded connection.

Hot Work Precautions

Precautions required include but are not limited to:

- Valves, regulators, hoses, and torches shall be checked regularly;
- Welding or cutting on vessels that contain combustible or flammable material is prohibited unless completely purged and residue removed;
- Gas cutting and welding equipment shall be secured to avoid damage and disturbance;
- Welding curtains should be used to prevent hot slag from scattering and to protect the vision of persons in close proximity to the hot work.
- Personnel performing hot work shall ensure that the atmosphere is free of flammable or combustible vapors. Should doubt arise, consult the Health and Safety Office to determine if the work should continue;
- Ensure adequate ventilation is provided;
- Segregate combustible material at least 35 feet from work area;
- Provide guarding in the form of shielding and covering if combustibles cannot removed or segregated;
- Remove combustibles from common surfaces when welding on metal walls, partitions, or ceilings is to be completed;
- Special attention to welding or cutting pipes in contact with walls made with combustible materials; and
- Post a fire watch in areas where combustibles cannot be safely segregated from work, where sparks may impact lower levels in cases of elevated work, or where a fire alarm has been partly or completely disabled in order to perform the work.

Contractors and Vendors

RSCC Project Managers shall evaluate hot work activities to be conducted by contractors or vendors for adherence to the Hot Work Permit policy prior to the start of work. RSCC employees, contractors and vendors are required to complete the Hot Work Permit form at least 24 hours prior to the start of work unless precluded by an emergency situation.

ATTACHMENT A

RSCC SAFETY WORK PERMIT FORM

This form is to be filled out in its entirety by the responsible individual who has personally inspected the worksite.

PLEASE TELL US WHO WILL DO THE WORK

Name of responsible person: _____ Performing shop or company:_____

Telephone: _____Date and Time work to be performed: _____

Building: _____Room, area, or equipment:_____

Describe the work to be performed: _____

Live Electrical Work **(Any activities that require work to be performed on equipment that is in an electrically energized state will require this permit system.)** Diagnostics or troubleshooting live equipment < 480 volts (i.e. verifying equipment is isolated with a properly rated volt meter) does not require the permit system, but will only be performed by trained electricians and trained HVAC personnel with the appropriate PPE. **All 480 volts and greater, whether diagnostic or live work, require this permit system.** Only the Maintenance Supervisor or Director level has the authority to approve the permit.

All personal protective equipment has been provided and is being worn in accordance with RSCC's PPE Policy.

Gloves have been tested for holes prior to work start.

Boundaries around the equipment have been controlled keeping untrained employees or other personnel a safe distance from the energized equipment.

Maintenance Supervisor or Director Level Signature_____

Chemical, Radiological, and Biological Hoods, Refrigerators, or Drains: Any work on chemical, radiological, or biological hoods that requires work to be performed inside the hood or on the hood ducting, or work on refrigerator/freezers or drains containing chemical, radiological, or biological materials.

All energized equipment isolated by means of Lockout/Tagout.

All personal protective equipment has been identified by the Health and Safety Coordinator at 882-4565 as follows:

Gloves Required – Type:_____

Tyvek Suit Required

Respiratory Protection Required – Type: _____

Supervisor Signature_____

Hot Work: Activity that could produce flames, sparks, slag, or other hot fragments that might act as an ignition source to flammable materials in the area. Hot Work also includes any activity that could generate sufficient smoke or heat to activate a fire alarm detection system. It includes, but is not limited to: welding, cutting, torch soldering, brazing, heat treating, pipe thawing, and grinding.

Hot work equipment will be inspected and determined to be in good repair prior to the start of work.

This work cannot reasonably be done in a shop or other area designated for this purpose and equipped to minimize hazards.

No sprinklers will be taken out of service while this work is being done.

The potential for smoke, heat, airborne dust, etc. to trigger a fire alarm has been evaluated and appropriate measures will be taken to prevent false alarms. Advance arrangements may be necessary for Electricians to deactivate and restore systems or components. Ensure that systems are restored as soon as possible after the completion of work so that fire watches can be minimized.

Surrounding floors will be swept clean and, if combustible, wet down or covered by a welding blanket.

There are no combustible fibers, dusts, vapors, gases or liquids in the area. There are no tanks or equipment that previously contained flammable liquids in this area. Containers have been purged and the absence of explosive gases or vapors verified with a combustible gas detection instrument prior to the work. If there is a possibility of a leak developing in nearby piping, equipment, or tanks containing flammable liquids or gases, the area's air will be continuously monitored for explosive conditions. Call the RSCC Physical Plant if assistance is needed to test the area**.**

All combustibles will be relocated 35 feet from the operation and the remainder protected with metal guards or flame-proofed curtains or covers (not ordinary tarpaulins).

Fire alarms will not be taken out of service or a suitable fire watch will be arranged. ***When possible, the Physical Plant will be notified in advance if it is necessary to disable the alarm system for an entire building.***

Ample portable fire extinguishers and trained personnel to use them will be available at the job site. At a minimum, a 5 lb. ABC rated extinguisher must be present in addition to the normal compliment of building extinguishers.

All floor and wall openings, including cracks, within 35 feet of the operations will be tightly covered.

The need for a fire watch during work, work breaks, and for 30 minutes after completion has been evaluated and an appropriate number of responsible personnel will be assigned to this duty.

I have contacted the Health and Safety Coordinator at 882-4565 and received a verbal approval to proceed with the work.

Workers will not be exposed to toxic fumes and the work will not create an indoor air quality issue or else adequate ventilation will be provided to prevent these problems.

Prior to starting work, workers will determine the location of the nearest: alarm pull station, building fire extinguisher and telephone (accessible) and verify a clear escape route from the work area.

The person performing the hot work will verify the conditions specified in this permit prior to starting work each day that the permit is in effect. In addition they will document that verification or re-verification for each day after the start date by adding their initials, with the date, to the permit kept at the work site (directly below the signature line).

Person Responsible for Authorizing Hot Work -- *I verify that the above location has been examined; the precautions checked above have been implemented to prevent fire and unintended fire alarms. Permission is authorized for this hot work.*

Permit Authorizing Individual's Signature

It has been determined that a **Fire Watch** is necessary before hot work can proceed? ❒ Yes ❒ No

Fire Watch Designated to Monitor Hot Work

NOTE**: This permit expires after the designated "finish time" and shall not exceed 48 hours. If the hot work is to continue, another permit must be issued. If submitting by fax, please fill out, print, and fax to *Physical Plant* at (865) 882-4542 or submit a completed form in person at the Physical Plant.**

***A copy of this completed form must be posted in the area of the hot work*.**

Return this form to the Health and Safety Officer after work is completed

Procedure No 13
Subject: Hazardous Waste Management Plan
Reference: EPA 40 CFR 271
Distribution All Employees Review Date: February 20, 2009

Purpose:	The Hazardous Waste Management Plan (HWMP) was developed for RSCC faculty and staff who may generate, handle, or store hazardous chemical wastes.

What is Hazardous Waste?

A waste material is a hazardous waste if it exhibits a characteristic of a hazardous waste or if it is listed as a hazardous waste by the U.S. Environmental Protection Agency (EPA) or by the Tennessee Department of Environment and Conservation. A characteristic hazardous waste exhibits one or more of the following characteristics:

- Ignitability
- Corrosivity
- Reactivity
- Toxicity

Hazardous Waste Characteristics

Ignitability - A waste may exhibit the characteristic of ignitability if the label or Material Safety Data Sheet (MSDS) indicates any of the following properties:

- Flammable,
- Combustible liquid, or
- Oxidizers that readily yields oxygen to stimulate the combustion of organic matter.

Examples include spent paint thinner with a flashpoint less than 140 F and pressurized aerosol cans marked “Flammable.”

Corrosivity - A waste may exhibit the characteristic of corrosivity if the pH is less than or equal to 2 or greater than or equal to 12.5 or the container label or MSDS indicates that the material is corrosive. Concentrated hydrochloric (muriatic) acid, nitric acid, sulfuric acid, potassium hydroxide (caustic potash), and sodium hydroxide (caustic soda) are examples of materials that may be hazardous wastes due to corrosivity.

Reactivity - A waste may exhibit the characteristic of reactivity if the container label or MSDS indicates any of the following properties:

- Oxidizer
- Organic peroxide
- Pyrophoric
- Unstable (reactive)
- Water reactive
- Explosive

Examples of wastes that exhibit the characteristic of reactivity include dry picric acid, potassium, sodium, and many cyanide compounds.

Toxicity - The EPA lists a number of elements and compounds that may cause a waste to exhibit the toxicity characteristic. These items include heavy metals such as arsenic, chromium, lead, mercury, and silver; also included are organic compounds such as 2,4-D, carbon tetrachloride, chloroform, and vinyl chloride.
Many of these toxic materials may be found in common items like batteries, spent black and white photo fixers, fluorescent tubes, color cathode ray
tubes, and other electronic devices.

Listed Wastes - In addition to wastes that exhibit hazardous characteristics, the EPA publishes lists of specific items that are classified as hazardous wastes.
These items are listed on the basis of potential for harm to humans and/or the environment. Examples of listed wastes range from spent solvents like methylene chloride, benzene, and trichloroethylene to highly toxic chemicals like arsenic, beryllium, and sodium azide.

Health and Safety Office can help you determine if your waste is regulated as a hazardous waste.

Hazardous Waste Management

Generator's Responsibility - Hazardous material must never be poured down the drain or placed in the domestic trash. Hazardous waste generators and their supervisors are accountable for violations in their areas. Any concerns about hazardous waste generation, storage and disposal should be addressed to Health and Safety Office, (865) 882-4565. The following guide lines are provided as the minimum procedures to follow:

- Use the RSCC Hazardous Waste Tags, provided by the Health and Safety Office to properly identify your hazardous waste.
- The chemical NAME(s), no formulas, should be listed on the front of the tag.
- Chemical containers must be kept tightly sealed at all times except when waste is being added. DO NOT leave caps off. Do not use Parafilm or corks to close the container. This is a common finding by TDEC regulatory officials.
- DO NOT mix incompatible waste. Serious incidents have occurred as a result of incompatible wastes being mixed together.
- Chemical waste containers must be segregated according to hazard class and separated by spill control containment.

- Coordinate with the Health and Safety Office prior to generating any new waste stream to ensure proper classification, containerization and management.
- Request disposal of peroxide forming chemicals, i.e., ethyl ethers and 2-4 dioxane 6 months after the container has been opened or after 12 months if unopened.
- Never accumulated over 50 gallons of waste in individual laboratories.
- Request a hazardous waste pick up by contacting the Health and Safety Office at 882-4565.

Chemical Spills

Who Cleans Up A Chemical Spill?

Each department can easily clean up spills which do not involve injury, do not represent a fire hazard, are less than one gallon, and for which you have the proper training and proper protective equipment to do the cleanup, you can clean the spill.

Call RSCC Security for a chemical spill response team to handle the cleanup duties BUT FIRST report all injuries, fires, explosions and potentially life threatening situations to 911 then contact RSCC Security.

Planning For Chemical Spill Emergencies

1. Designate people in your lab or service area to be on-site emergency coordinator and back-up emergency coordinator. These people should know what hazards exist in your area and how to implement the spill response plan (contingency plan) for the area. They will act as advisors to other Responder Personnel.
2. Prepare an Emergency Contingency Plan and post it in an easily visible area of your satellite accumulation area (preferably near the telephone and exit way). Train all your employees in chemical spill procedures when they are first hired and yearly thereafter. Document the training to certify that the training was given.
3. Purchase spill cleanup material and personal protective equipment (chemical resistant suits and gloves, safety goggles, etc.) for your laboratory. Know what the limitations of the personal protective equipment are. If you have any questions about the personal protective equipment, call the Health and Safety Office.

Hazardous Chemical Spill Cleanup Guidelines

Large Hazardous Chemical spills or hazardous materials emergency situations should be handled as a fire emergency. Initial response in a fire situation can be summarized as RESCUE, CONFINE, REPORT, SECURE, AND CLEANUP (FIGHT FIRE). These principles can also be applied to a hazardous materials spill situation.

Rescue
As you leave an area involved in a chemical spill, assist people exiting the area.

- Evacuate personnel from the spill area.
- Direct personnel to nearest fire exit. Do not use elevators.
- Alert neighbors.
- Attend to victims.

First Aid

- Remove victim from spill area to fresh air (but do not endanger your own life by entering areas with toxic gases).
- Immediately remove contaminated clothing.
- Wash skin with soap and water.
- Flush skin and/or eyes with water for AT LEAST 15 minutes. (You may not feel any immediate effect from chemical spills, but it is very important to wash quickly and thoroughly as many chemicals can cause severe tissue damage which is not apparent until hours later.)
- Get medical attention for victims.

Chemical spills over large body areas

- Remove contaminated clothing while under shower.
- Flood affected body area in cool water for AT LEAST 15 minutes.
- Resume water wash if pain returns.
- Wash off chemicals with mild detergent and water; do not use neutralizing chemicals, unguents, creams, lotions or salves.
- Make sure medical personnel understand exactly what chemicals are involved.

Victims of Bromine spills

- Flush with cold water; apply compress saturated with dilute thiosulfate.
- Get immediate medical help.

Victims of Hydrogen Fluoride (HF) spills

- Flush with cool water until any whitening of tissue disappears.
- Swath injured areas with soaking wet, iced cloths.
- Get immediate medical help.

Confine

- Close fire doors.
- Isolate area.
- Establish exhaust ventilation if possible.
- Vent fumes only to outside of building.
- Open windows, if possible without exposing you to fumes.
- If fumes are in a room which is not vented to outside of building, close off room.

Report

Call 911:

- for spills that involve injury requiring medical treatment
- for spills that involve fire or explosion hazards
- for spills which are potentially life threatening

Call the Health and Safety Office:

- for all chemical spill situations
- for spills of one gallon of a chemical or more, or any quantity of a highly reactive or toxic material
- for spills of an unknown chemical
- for spills you do not have proper training or proper protective equipment to do the cleanup
- for spills for which you have any questions or doubts about your ability to clean up the spill

The type of information you will be requested to provide when you call 911 and RSCC Security will consist of the following:

- First, state that this is an emergency.
- The name, telephone number and location of the reporter.
- Location of the incident.
- Time and type of incident.
- Name and quantity of material involved, to the extent known.
- The extent of injuries, if any.
- The possible hazards to human health or the environment outside the facility.
- Warn emergency responders of any other hazards they may encounter, such as large quantities of stored chemicals (particularly flammables, oxidizers and air-born toxic or irritant materials), radioactive materials or biohazards, etc., on site.
- The safest route to approach the spill.

Secure

Until Emergency Responders arrive on the scene, you and your staff will have to block off entrances to the spill site and prevent people from entering the contaminated area.

- Lock doors leading to the chemical spill and post signs on doors warning of the spill.
- Tape or rope off stairwells and elevators leading to the spill and hang signs on the tape.
- When chemical fumes are being spread through a building's air handling system, call the Physical Plant to have the ventilation system shut off.
- Post staff by commonly used entrances to the spill site, so they can warn people to use other routes.
- For large outdoor chemical spills, keep people upwind and uphill from the site.

Cleanup

What To Do When You Clean Up A Chemical Spill

If you have the proper training, proper personal protective equipment and the proper material to absorb and clean up your chemical spill, and no one has been injured, the spill is contained, and the spill is not life threatening or a fire or explosion hazard, then follow these procedures:

1. Perform all the procedures in the RESCUE, CONFINE, REPORT, and SECURE sections above, with the exception that you do not need to report the incident to 911.

2. Locate the spill kit and choose appropriate personal protection.

    - Always wear protective gloves and goggles or face shield.
    - If there is a chance of body contact, wear apron and coveralls.
    - If the spill is on the floor, wear rubber or plastic boots (NOT leather).

3. If the spill involves a flammable material.

    - Turn off hot plates, stirring motors, flame sources.
    - Shut down all equipment.
    - If unable to shut off sources of ignition, notify RSCC Security.

4. Confine or contain the spill.

    - Cover with an absorbent mixture.
    - Clean up minor spills with paper towels or sponge if they won't react.
    - Sweep solid materials into a dust pan, place in sealed container.
    - If acid/base, first add a neutralizing agent; sodium bicarbonate for acids, sodium bisulfate for bases.

    Small amounts of inorganic acids/bases:

    - Use neutralizing agent and absorbent material.

    Small amounts of other materials:

    - Absorb with non-reactive material (e.g. vermiculite, sand, towels, Floor-Dri).

    Large amounts of inorganic acids/bases:

    - Neutralize and call for help.

    Large amounts of other materials:

    - Make a judgment call: depending on the amount, toxicity or what the substance can run into or react with, you may handle it yourself or call for help.

5. Spills that require special handling:

    Mercury:

    - Small spill (broken laboratory thermometer and smaller quantities of mercury), open windows and ventilate area while cleaning.
    - Use aspirator bulb or suction device.

    Alkali Metal (e.g. Sodium or Potassium Metals):

    - Smother with dry sand.
    - Put in hood.
    - If possible, react with isopropyl alcohol.

    White (Yellow) Phosphorus:

    - Blanket with wet sand or wet absorbent.

6. Remove absorbent material with a broom and dust pan.

    - Place in plastic bag or other appropriate container.
    - If the spilled chemical is a volatile solvent, transfer plastic bag and dispose of as a hazardous waste.
    - If spilled material in a non-volatile, hazardous chemical, dispose as a hazardous chemical waste.
    - If spilled material is a non-volatile, non-hazardous chemical, contact the Health and Safety Office to determine the appropriate route of disposal.

7. Wet mop spill area.

    Comments

    A "large" spill can be as small as a few milliliters if the material is highly volatile, toxic compound spilled in a confined space. Many times you will have to make a professional judgment as to the severity of the spill. When in doubt, you can always call the Health and Safety Office at 882-4565 for advice.

    Chemical spill cleanup kits are very handy to have in the lab and other service areas which use chemicals. The kits are useful if you and your fellow workers know how to use them properly. Chemical absorbent or neutralizing powder pads can be used to quickly contain a spill. Use these items if your personal safety is not jeopardized.

    Be aware of the fact that while you may be in a well ventilated room, the Lower Explosive Limit (LEL) of a chemical may be reached at the surface of the spill and you want to avoid any sparks of sources of ignition when doing the clean up. The protective equipment in the spill kit will not protect you from a flash fire. Many times, the best way to handle the spill of a highly volatile compound, such as diethyl ether or chloroform, is to open windows and fume hoods, leave the room, close and lock the door and let the room air out. In these cases, call the Health and Safety Office so they can send some people to monitor the situation. If, in your professional judgment, there is a strong risk of a flash fire or explosion, pull the nearest fire alarm and evacuate the building. Then call RSCC Security for fire department backup protection. In most cases of a chemical bottle breaking in a laboratory, however, you will not need to call the Health and Safety Office as the lab ventilation system is usually designed to handle such situations.

Training

Initial training for all personnel generating or handling Hazardous (Chemical) Waste with annual refresher training is mandatory as per EPA and the Tennessee Department of Environment and Conservation. This involves a large number of people at RSCC. Therefore, we have set up two methods which can be utilized for training.

Method 1

This is the preferred method of training by the Health and Safety Office. Under this method, the Health and Safety Office will train all personnel involved in Hazardous (Chemical) Waste activities. The Health and Safety Office will also maintain all training records for such personnel.

Method 2

The Health and Safety Office will "train-the-trainer." One person from each laboratory MUST be trained by the Health and Safety Officer. This person can then train other personnel in the laboratory. Training documentation must be maintained for personnel trained. These records must be maintained for not less than three years from the last date of employment. All personnel must be trained within six months of hire. The Health and Safety Office will keep training records on each of the trainers trained.

Procedure No 14
Subject: Chemical Hygiene Plan
Reference: CFR1910.1200; 1910.1450 and NFPA 45
Distribution All Employees Review Date: February 20, 2009

Purpose:	The primary purpose of the Roane State Community College Chemical Hygiene Plan (CHP) is to protect employees and to reduce the risk of injury from chemical hazards associated with particular laboratories. This is accomplished by establishing responsibilities, policies and procedures for handling hazardous chemicals and through the development and implementation of work practices and control measures expressly tailored to the various laboratories present at the College. Additionally this plan serves as a guide for the various College Divisions as they develop their specific Chemical Hygiene Plans.

Policy Statement

The U.S. Department of Labor and the Occupational Safety and Health Administration (OSHA) promulgated the final rule (29 CFR 1910.1450) titled Occupational Exposures to Hazardous Chemicals in Laboratories on 31 January 1990. Tennessee Occupational Health and Safety Administration officials have adopted this standard verbatim. This new standard differs from many OSHA health standards in that it does not establish new exposure limits, but sets performance provisions designed to protect laboratory workers from potential hazards in their work environment.

Anyone having questions concerning this Plan may contact the Health and Safety Office at 882-4565.

This Plan also mandates practices and procedures for post-exposure follow-up and recordkeeping.

Specific requirements of this Plan include:

- Designation of Departmental Chemical Hygiene Officers (CHO).
- Development of Standard Operating Procedures

- **Health and Safety Office**
  - Develop and maintain this written College-wide Plan and perform annual reviews.
  - Monitor department compliance with the Program.
  - Provide guidance and technical assistance to departments in the implementation of the program.
  - Assist departments in fulfilling their training requirements.
  - Provide guidance and assistance with hazardous waste handling, storage and disposal.
- **Departments That Have Laboratories**
  - Appoint a CHO to facilitate implementation of this Program.
  - Ensure all necessary personal protective equipment has been provided.
  - Ensure necessary and required training is provided to potentially exposed employees.
  - Monitor and enforce compliance with Universal Precautions.
- **Departmental Chemical Hygiene Officers**
  - Perform surveys to ensure laboratories are in compliance with this program.
  - Ensure new employees are oriented to this standard when initially hired.
  - Maintain all departmental records required by the program.
  - Review the Departmental Chemical Hygiene Plan annually and revise as needed. Review must be documented in writing. Documentation may be as simple as writing and signing a statement on the cover page stating that the annual review has been performed.
  - Ensure appropriate personal protective equipment is worn by all laboratory personnel and visitors.
  - Ensure all Hazardous Waste containers are appropriately labeled.

- **Employees, Students and Other Potentially Exposed Individuals**

  - Understand and comply with the provisions of this Program and the protection afforded by the OSHA standard.

  - Notify your departmental CHO or other College official of activities which present potential exposure concerns.

  - Be aware of engineering controls and the proper use of those controls. Follow established controls to eliminate or minimize potential exposure.

  - Be aware of the proper use, limitations and location of available personal protective equipment. Use appropriate personal protective equipment to eliminate or minimize potential exposure.

  - Be aware of and observe established housekeeping procedures, e.g. use mechanical devices to clean up broken glass in lieu of using bare hands. Maintain work area in a clean and sanitary manner.

  - Attend all required training.

  - Make certain that all containers have appropriate warning labels.

Methods of Compliance

- **Procurement.**

  - Purchase requests for chemicals shall include a request for the supplier to provide a copy of any applicable MSDS to the H&S Office. Personnel should order the smallest quantity necessary to complete the work.

  - Personnel who initiate purchase requests should review Health and Safety data on chemicals prior to ordering to determine any special requirements for handling, storage or disposal.

  - Material Safety Data Sheets (MSDS) for chemicals used at RSCC are available through the Individual Labs or the Health and Safety Office.

  - Containers should be inspected upon receipt to ensure they are intact and not leaking. Damaged or unlabelled containers shall not be accepted.

- **Chemical Storage.**

  - Chemical storage inside the laboratory should be limited to those chemicals necessary for work in progress. Central storerooms shall be used when they are available. Chemicals should not be stored on the bench. Open shelves should be designed with a restraining device or lip to prevent containers from creeping or tipping over.

  - Chemicals shall be stored according to the compatibility categories. Chemicals within a given storage group may be incompatible with other chemicals in that group. Spill trays should be used to reduce commingling in the event of spills or leaks.

  - Chemicals shall be inspected at least semiannually to determine their condition. Corroded or leaking containers should be turned in as hazardous waste.

  - Cabinets and storage areas shall be labeled.

- **Hazardous Chemical List.**

  - The hazardous chemical list should include:

    - "Chemical Name".
    - CAS numbers for hazardous ingredient(s) (if available).
    - Permissible exposure limit/threshold limit value.
    - Physical hazards.
    - Health hazards - signs and symptoms of overexposure.
    - Approximate amount of chemical present (optional).

  - This list should be available at each workplace and cover only those chemicals used in that specific workplace. A master list should be kept by the CHO.

- **Flammable and Combustible Liquids.**

  - The quantity of flammable and combustible liquids stored in a laboratory room shall not exceed 60 gallons. The quantity of liquids stored in an approved inside storage room shall be in accordance with NFPA 30.

  - Flammable and combustible liquids shall be stored in glass, metal or plastic containers which meet the requirements of NFPA 30. Flammable liquids shall be stored in approved safety cans when the container quantity exceeds 2 gallons. Combustible liquids shall be stored in approved safety cans when the container quantity exceeds 5 gallons (NFPA 45).

  - Flammable and combustible liquids shall be stored in approved cabinets designed in accordance with NFPA 30. Cabinets should not be located adjacent to an exit or in a stairwell.

- The transfer of Flammable liquids to smaller containers from bulk containers not exceeding 5 gallons shall be conducted in a chemical hood or in an approved inside storage room.

- Flammable liquids shall not be transferred between metal containers unless the containers are electrically bonded.

- Refrigerators and freezers used to store flammable liquids shall be explosion-proof or "laboratory safe" in accordance with NFPA 45.

- **Water Reactive and Shock Sensitive Chemicals.**

  - Water reactive chemicals shall be segregated from other chemical storage. These chemicals should be stored in approved cabinets. If approved cabinets are not available, containers should be over packed in a metal can during storage.

  - Water reactive chemicals shall not be stored with flammable or combustible liquids.

  - Shock sensitive and peroxide forming chemicals, if unopened should be turned in as hazardous waste after 12 months of storage. Once opened, they should be turned in as hazardous waste, after 6 months of storage.

- **Compressed Gases.**

  - Gas cylinders shall be labeled or tagged to show their contents.

  - Gas cylinders shall be secured by the use of clamps, chains, straps, or otherwise restrained while in storage or use.

  - When gas cylinders are in storage, hand valves shall be tightly closed and the valve protector cap shall be in place.

  - Compressed gas from cylinders shall be reduced through the use of a regulator specifically designed for that purpose.

  - Reduction valves, gauges and fittings used for oxygen shall not be used for other gases. Likewise, valves, gauges and fittings used for other gases shall not be used for oxygen.

  - Gas cylinders shall not be stored in the laboratory. The number of cylinders should be limited to the number necessary to complete work in progress.

  - Compressed gas cylinders shall be moved using a suitable hand truck. The gas cylinder shall be strapped in place with the valve protector cap installed. Only one cylinder shall be moved at a time.

- **Transporting Chemicals.**

  - Toxic, flammable or corrosive chemicals should be placed in a carrying bucket or other unbreakable container when moved between rooms or through the laboratory corridors.

  - Wheeled carts should be used to move larger quantities of chemicals which cannot be hand carried. Carts with open shelves should be designed with a restraining device or lip to prevent containers from creeping or tipping over.

- **Engineering Controls.**

  - Engineering controls including hoods, glove boxes, inhalation chambers, gas cabinets, local exhaust ventilation and substitution of less toxic chemicals should be used to minimize exposure to all hazardous chemicals in the laboratory.

  - Laboratory operations shall be planned and conducted using appropriate engineering controls. High risk operations shall be conducted inside primary containment including chemical hoods, glove boxes or inhalation chambers.

- **Chemical Exhaust Hoods.**

  - Hoods shall have an average face velocity of 90 to 120 feet per minute (fpm) with the sash in the full open position. Sash stops should be installed when the face velocity requirement cannot be met with the sash in the full open position.

  - Hood performance will be evaluated annually by H&S and after any repair or modification.

  - Hoods used for toxic compounds, carcinogens or reproductive toxins shall be evaluated on a monthly basis by the CHO or their designated representative.

- **Glove boxes.**

  - Glove boxes shall be maintained at a negative pressure of at least 0.25 inches water gauge. A manometer or magnehelic gauge shall be installed to monitor differential pressure.

  - Glove boxes shall have an inward velocity of at least 50 fpm through all open ports or doors. Total makeup air volume shall be adequate to prevent explosive concentrations of gas, vapor or dust inside the enclosure.

  - Glove box performance shall be evaluated annually, and after any repair or modification to the ventilation system.

- **Administrative and Work Practice Controls.**

  - Working quantities of hazardous chemicals outside of storage during an operation shall be as small as practical. Containers shall be closed when not in use.

  - Standard Operating Procedures shall be prepared for each laboratory operation using hazardous chemicals. SOPs shall be approved by the CHO.

  - Mouth pipetting is prohibited.

  - Handle and store laboratory glassware with care to avoid damage. Damaged glassware should not be used.

  - Glassware used for pressure or vacuum service shall be designed specifically for that purpose.

  - Work with the hood sash closed as much as possible during the operation.

  - Keep all apparatus and containers at least 6 inches behind the hood face to minimize spillage from the hood.

  - Minimize the storage of chemicals or hazardous waste inside the hood. Use approved cabinet or satellite storage locations.

  - If the hood sash is supposed to be partially closed for operation, the hood should be so labeled and the appropriate closure point clearly marked.

- **Personal Protective Equipment**

  - PPE shall be provided, laundered or disposed of at no cost to the employee.

  - All personal protective equipment shall be repaired or replaced as needed.

  - All personal protective clothing shall be removed prior to leaving the work area.

  - Disposable gloves shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured or when their ability to function as a barrier is compromised.

  - Gloves shall be of appropriate materials, intact latex or intact vinyl of appropriate quality for the procedures performed and of appropriate size for each wearer. Hands are to be washed using warm water and liquid soap immediately after removing gloves.

  - No gloves shall be used if they are peeling, cracking or discolored of if they have punctures, tears or other evidence of deterioration.

ATTACHMENT A

EXPLANATION OF TERMS

Chemical Hygiene Officer (CHO) - The designated employee who is qualified by training or experience to provide technical guidance in the development and implementation of the Chemical Hygiene Plan.

Chemical Hygiene Plan - A written program which sets forth policy and procedures capable of protecting employees from the health hazards associated with their work place.

Combustible liquid - Any liquid having a flashpoint at or above 100 degrees Fahrenheit (F).

Compressed gas - A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 degrees F, or a gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 degrees F regardless of the pressure at 70 degrees F, or a liquid having a vapor pressure exceeding 40 psi at 100 degrees F as determined by ASTM D-323-72.

Employee - An individual employed in a laboratory who may be exposed to hazardous chemicals in the course of their employment.

Explosive - A chemical that causes a sudden, almost instantaneous release of pressure, gas and heat when subjected to sudden shock, pressure or high temperature.

Flammable liquid - A liquid having a flash point below 100 degree F, except any mixture having components with flash points of 100 F or higher, the total of which make up 99 percent or more of the total volume of the mixture.

Flammable solid - A solid other than a blasting agent or explosive that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns vigorously and persistently as to create a serious hazard. A chemical that ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis when tested by the method described in 16 CFR 1500.44.

Hazardous chemical - A chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in an exposed employee. This includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic (blood-forming) systems, and agents which can damage the lungs, skin, eyes or mucous membranes.

High Risk Operations - Experimental procedures involving the manipulation, handling or reaction of hazardous chemicals where the potential for release of gas, vapor or aerosol contamination is high. This category includes but is not limited to (i) rapid exothermic reactions, (ii) transfer of electrostatic powders, (iii) heating, mixing or transfer of volatile chemicals, (iv) pressurized operations where there is potential for uncontrolled release, and (v) work involving aerosol generation.

Laboratory - A facility or individual room where the "laboratory use" of hazardous chemicals occurs.

Laboratory hood - A type of engineering control enclosed on five sides with a movable sash or fixed partial enclosure on the remaining side designed to draw air from the laboratory into the enclosure to prevent or minimize the escape of contaminants into the laboratory space.

Laboratory scale - Work with substances in which the equipment used for reactions, transfers, and other handling are designed to be easily and safely manipulated by one person.

Oxidizer - A chemical other than a blasting agent or explosive as defined in Title 29 CFR, part 1910.109 (a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

Procedure No 15
Subject: Lockout/Tagout
Reference: CFR1910.147
Distribution All Employees Review Date: February 20, 2009

Purpose:	This policy is established to protect RSCC employees from the serious injuries that could result during the unexpected energization, startup or release of stored energy while servicing or repairing machinery or equipment. Applicable energy sources include, but are not limited to, electrical, thermal, mechanical, hydraulic, pneumatic and chemical.

This policy contains the necessary elements of a hazardous energy control program, which includes documented Lockout/Tagout procedures, employee training and periodic inspections as required by the Occupational Safety and Health Administration (OSHA) ***Control of Hazardous Energy Sources (Lockout/Tagout) Standard***, 29 CFR 1910.147.

EXEMPTIONS:

1. Minor servicing activities taking place during normal operations that are routine, repetitive and integral to the use of machines or equipment, provided that:

   a) There is no bypass or removal of guards or other safety devices;

   b) Employees are not required to place any part of their bodies into a point of operation, or where other associated dangers exist or may occur.

   c) Extensive disassembling of the equipment is not required for repairs.

   d) Effective alternate protection measures are used which allow an employee to perform minor servicing without being exposed to the unexpected release of hazardous energy.

2. Cord and plug connected electrical equipment that, when unplugged, contains no stored energy and cannot be unexpectedly energized. The plug must be under the **exclusive control** of the **authorized employee** working on the equipment.

(Note: a plug is in exclusive control of an employee if it is physically in the employee's possession, or within arm's reach and in the line of sight of the employee.)

3. Service on pressurized gas, steam, water, and petroleum products systems where continued operation is essential, shutdown is impractical, and special equipment is used which provides proven effective protection for employees.

DEFINITIONS

Authorized employee - An employee who locks or tags machines or equipment in order to perform servicing or maintenance.

Affected employee - An employee who is required to use machines or equipment on which servicing is performed under the Lockout/Tagout standard or who performs other job responsibilities in an area where such servicing is performed.

Energized - Machines and equipment are energized when they are connected to an energy source or they contain residual or stored energy.

Energy-isolating device - A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Energy source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Lockout - The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device - Any device that uses positive means, such as a lock, blank flanges and bolted slip blinds, to hold an energy-isolating device in a safe position, thereby preventing the energizing of machinery or equipment.

Servicing and/or maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining and/or servicing machines or equipment, including lubrication, cleaning or unjamming of machines or equipment, and making adjustments or tool changes, where employees could be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Tagout - The placement of a tagout device on an energy-isolating device, in accordance with an established procedure, to indicate that the energy-isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device - Any prominent warning device, such as a tag and a means of attachment that can be securely fastened to an energy-isolating device to indicate that the machine or equipment to which it is attached may not be operated until the tagout device is removed.

RESPONSIBILITIES

A. Supervisors and Lead workers:

1. Notify and communicate to employees the importance of implementing Lockout/Tagout procedures and make the Lockout/Tagout policy readily available to them.

2. Identify all **authorized employees** and ensure they attend initial training/retraining on the Lockout/Tagout policy.

3. Develop Machine-Specific Lockout/Tagout procedures, when necessary.

4. Conduct periodic Lockout/Tagout inspections, correcting any deviations or inadequacies observed, as required by this policy.

5. Provide **authorized employees** with individually assigned lockout and tagout devices.

B. Authorized Employees:

1. Comply with the Lockout/Tagout procedures outlined in this policy when performing service or maintenance work on machines or equipment.

2. Use only approved lockout and tagout devices for Lockout/Tagout. **NEVER use lockout or tagout devices for any purpose other than to perform Lockout/Tagout.**

3. Remove their individually assigned lockout and tagout devices once service or maintenance work is completed. Lockout/Tagout devices may not be left on beyond an **authorized employee's** work shift without supervisor approval.

4. Attend training sessions, as required by the policy.

5. Notify supervisors and lead workers of any change in their workplace or job duties which prevent them from following Lockout/Tagout procedures.

C. Health and Safety Office:

1. Develop, implement and maintain the Lockout/Tagout Policy.

2. Provide lockout/tagout training to employees.

3. Assist supervisors and lead workers in their annual and periodic lockout/tagout program inspections, when requested.

4. Maintain training records.

GENERAL LOCKOUT / TAGOUT PROCEDURES for DEENERGIZING EQUIPMENT

The following procedures apply in situations where **only one** energy source exists for machinery or equipment.

To properly deenergize and eliminate all sources of potential hazardous energy during servicing and maintenance operations and to prevent an employee from omitting an important step in the energy control procedure, **authorized employees** must follow the following Shutdown and Restart procedures:

A. SHUTDOWN PROCEDURES–ESTABLISHING LOCKOUT/TAGOUT

1. ***Prepare for Shutdown - Locate and Identify***
   Survey the work area to locate and identify all energy isolating devices to be certain which switch(s) and valve(s) apply to the machine or equipment to be locked out. (*If more than one energy source is involved, the Machine-Specific Lockout/Tagout Procedures must be followed*).

2. ***Notify***
   Notify all affected employees that a lockout/tagout is about to take place, the reason for the lockout/tagout, and the specific machinery or equipment affected.

3. ***Shut Down***
   If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.).

4. ***Isolate***
   Operate the disconnect switch, circuit breaker, valve or other energy isolating device to isolate (disconnect) the machine or equipment from its energy source.

5. ***Lockout/Tagout***
   Apply individually assigned lockout and tagout devices to the energy isolating device.

6. ***Relieve/Restrain Stored Energy***
   Stored energy such as that in rotating flywheels, hydraulic systems, springs, etc. must be dissipated or restrained by grounding, locking, bleeding down, etc.

7. ***Clear the Area and Test***
   Clear the area around the machine or equipment. Make sure that all personnel are safely positioned or removed from the area. Then test all the operating controls by putting them in the "on" position to ensure that the energy source has been successfully disconnected.

CAUTION: Return the operating control(s) to the neutral or off position before proceeding with servicing or maintenance work.

LOCKOUT/TAGOUT IS NOW COMPLETE - the authorized employee may proceed with servicing or maintenance work.

B. Restart Procedures–Removal of Locks and Tags

1. ***Check Machine/Equipment***
   Check the machine/equipment and surrounding area to ensure that nonessential objects have been removed, guards have been reinstalled and that the machine/equipment is operationally intact.

2. ***Verify***
   Verify controls on the machine/equipment are in the "neutral" or "off" position and that all the employees are safely positioned or removed from the area.

3. ***Remove Locks and Tags***
   Remove lockout/tagout devices and reenergize.

4. ***Notify Affected Employees***
   Before restarting machinery/equipment, notify **affected employees** that the servicing or maintenance is complete and that locks and tags have been removed.

SPECIAL CIRCUMSTANCES

A. Lockout/Tagout Procedure Involving More than One Person (Group Lockout/Tagout)

If more than one **authorized employee** is required to Lockout or Tagout equipment, each person shall place their own personal Lockout device or Tagout device on the energy isolating device(s). When an energy-isolating device cannot accept multiple locks, a multiple lockout hasp will be used. As each person no longer needs to maintain their lockout protection, that person will remove his/her lock from the hasp. Employees must NEVER depend upon someone else's lockout device, and must ALWAYS use their individually assigned lockout device.

B. Tagout Only Procedure

Tagout without a lock is allowed ONLY when machinery or equipment is incapable of being locked out. Tagout may be implemented ONLY with the prior knowledge and approval of the appropriate supervisor, using the following procedures.

1. The **authorized employee** will advise the supervisor that lockout is not possible.

2. The **authorized employee** and supervisor will determine if other equally effective controls can be implemented, such as the removal of a valve stem, isolating a circuit element, or by blocking a controlling switch.

3. Supervisors must provide training to the **authorized** and **affected employees** involved in the tagout operation at the time tagout is to be conducted.

4. The **authorized employee** will follow the applicable Lockout/Tagout Procedures outlined in this policy, omitting lockout.

5. The **authorized employee** will securely attach his/her tagout device to the energy isolating device where a lockout device would have been attached, if possible.

C. SHIFT CHANGES

When equipment and machinery must be serviced by more than one shift, a procedure must be established for the orderly transfer of responsibility from one shift to another. In developing this procedure, the following must be taken into account:

1. Each **authorized employee** must ensure that equipment he/she is working on is locked and tagged out with his/her individually assigned lockout/tagout device. Employees must NEVER depend on someone else's lockout device for protection.

2. **Authorized employees** must remove their individually assigned lockout/tagout devices once service or maintenance work is completed.

3. Lockout/tagout devices must NEVER be left on beyond an **authorized employee's** work shift without supervisor approval.

D. EQUIPMENT-SPECIFIC LOCKOUT / TAGOUT PROCEDURES

If servicing or maintenance work requires controlling more than one energy source on a machine, written Lockout/Tagout Procedures must be developed for each specific machine. If the methods to control energy sources are identical for a group of machines, then one set of procedures may be developed for the group. The Health and Safety Office is available to assist in developing machine-specific procedures.

E. REMOVING LOCKOUT AND TAGOUT DEVICES

The key to each lockout device must be in the sole possession of the employee to which it was assigned. Only the **authorized employee** who applied the lockout or tagout device may remove it, except as noted below.

EXCEPTION: When the **authorized employee** who applied a lockout or tagout device is not available to remove it, the device may be removed ***ONLY under the direction of TWO supervisors*** provided that:

1. Absolute verification has been made that the employee is not on College grounds or otherwise available.

2. Every reasonable effort has been made to contact the employee to notify him/her that his/her lockout/tagout device has been removed.

3. The employee is informed before returning to work that his/her lockout/tagout device has been removed.

PERIODIC INSPECTIONS

Documented periodic inspections must be made at least **annually** by supervisors to verify that Lockout/Tagout procedures are understood by employees and are being followed properly. A form in **Appendix A** is provided for this purpose, a copy of which should be sent to the Health and Safety Office. The Health and Safety Office is available to assist in conducting periodic inspections.

CONTRACTORS

RSCC Lockout/Tagout shall be made available for review to all contractors that are involved in work activities subject to OSHA's Lockout/Tagout regulations (29 CFR 1910.147). The Physical Plant will inform the contractor that Lockout/Tagout procedures shall be implemented through compliance with the contractor's Lockout/Tagout program meeting the requirements of 29 CFR 1910.147.

All Physical Plant employees that perform work in cooperation with contractors must be informed of the restrictions and prohibitions associated with an outside Contractor's Lockout/Tagout procedures. In no situation(s) is a contractor allowed to remove College lockout/tagout devices without the expressed permission of the Physical Plant. The procedures outlined in the **REMOVING LOCKOUT/TAGOUT DEVICES** section of this policy shall apply**.**

TRAINING

Training will be provided by the Health and Safety Office in conjunction with appropriate supervisors and lead workers. The following training is required:

1. **Authorized employees** will receive initial training in how to recognize hazardous energy sources, the type and magnitude of the energy available in the workplace, and the required Lockout/Tagout procedures to be followed to ensure energy isolation and control.

2. **Affected employees** will be instructed in the purpose, use and restrictions of Lockout/Tagout and how to recognize that Lockout/Tagout is being implemented.

3. **Authorized employees** will receive retraining whenever:

    a) their job assignments change;

    b) a change in machines, equipment or processes creates a new hazard;

    c) Lockout/Tagout procedures change; or

    d) observations or inspections reveal that an employee is not following or does not fully understand the Lockout/Tagout procedures.

4. Training will be documented and records maintained by the Health and Safety Office.

Appendix A

Periodic Lockout/Tagout Inspection

Directions:

- Conduct periodic inspections **at least annually**
- Use one form for each machine or equipment that has a written Lockout/Tagout Procedure
- Keep the original, completed form **on file**, and send a copy to the **Health and Safety Office.**

Physical Plant Shop:	**Date:**
Machine/Equipment Inspected:	

Employees included in the inspection:

1.	2.	3.
4.	5.	6.
7.	8.	9.

Review the Lockout/Tagout Procedures and employee responsibilities with the authorized employees and complete the following:

1. Do the employees understand the Lockout/Tagout Procedures and their responsibilities under the Lockout/Tagout? [ ] YES [ ] NO
If no, indicate corrective action taken:

_____

2. Do the employees follow the Lockout/Tagout Procedures? [ ] YES [ ] NO
If no, indicate corrective action taken:

_____

3. Are the established Lockout/Tagout Procedures effective to provide full protection? [ ] YES [ ] NO
If no, indicate corrective action taken:

_____

4. Other Problems noted and corrective actions taken:

_____

_____

Person(s) Conducting Inspection:

Name:	Signature:
Name:	Signature:

Procedure No 16
Subject: Confined Space
Reference: CFR1910.1030
Distribution All Employees Review Date: February 20, 2009

Purpose:	This procedure details the process and requirements used for safe entry into a "permit-required confined space."

Scope

This Confined Space (CS) procedure applies to all work involving confined space at Roane State Community College campuses.

Definitions

Acceptable entry conditions - The conditions that must exist in a permit space to allow entry and assure safe entry and work conditions in the space.

Action Level - The concentration of a monitored chemical/parameter that requires a corresponding action. For example, if a monitored chemical exceeds the respirator protection factor, personnel must evacuate the CS.

Attendant - An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the permit required space program.

Authorized entrant - An employee who is authorized by the employer to enter a permit space.

Blanking or blinding - The absolute closure of a pipe, line, or duct by the fastening of a solid plate that completely covers the bore and is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Confined Space (CS) - A confined space is an area that is large enough and so configured that an employee can enter to perform work assignments, has restricted means for entry or exit, and is not designed for continuous employee occupancy. There are two types of confined spaces: Permit-required confined space and non-permit required confined space.

NOTE: Any open pit or trench in excess of four feet deep will be considered a permit-required confined space until tested and found to be free of atmospheric hazards and engulfment hazards.

Confined Space - Examples include:

- boilers
- ditches and trenches in excess of 4 feet deep
- enclosed drainage ditch entry points
- elevator shafts
- manholes
- process equipment
- sewers
- storage tanks
- ventilation ductwork

Confined Space Inventory - An inventory of the permanent confined space including confined space identification number, location, and available hazard information. Additional information may also be added such as control points.

Compressed Air - a compressed gas used for such work as gas welding. For the purposes of confined space entry, compressed air does not include breathing air contained in an airline, escape bottle, or Self-Contained Breathing Apparatus (SCBA).

Double block and bleed - The closure of a line, duct, or pipe by closing and locking two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Emergency - Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment - The surrounding and effective capture of a person by a liquid or flowable solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry - The action by which a person passes through an opening into a permit-required confined space.

Note: Entry is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry permit - The written or printed document that is provided by the employer to allow and control entry into a permit space and that contains pre-specified information as required by the OSHA standard.

Hazardous atmosphere - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness.

Hot work permit - The employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediate danger to life or health (IDLH) - Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space. Examples of IDLH conditions: Unknown atmosphere, oxygen deficient atmosphere (< 19.5% O_2), oxygen enriched atmosphere (> 23.5% O_2), atmospheres with > 10% LEL, or chemicals at concentrations ≥ IDLH concentration determined by NIOSH.

Inerting - The displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. Inerting produces an IDLH oxygen-deficient atmosphere.

Isolation - The process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

Line breaking - The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Oxygen deficient atmosphere - An atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen enriched atmosphere - An atmosphere containing more than 23.5 percent oxygen by volume.

Non-permit confined space – A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Permit-required confined space - A confined space that has or the potential exists for hazardous atmospheric conditions (toxic, flammable, asphyxiating), engulfment, inwardly converging walls or floors configuration, or any other recognized serious hazard. Examples of these spaces include (but are not limited to) tanks, process vessels, sumps, sewers, pits, boilers, and ventilation systems. In some instances, trenches, dikes, and ditches over four feet deep will also be considered confined space.

Permit-required confined space program - (permit space program) The overall program for controlling and, where appropriate, for protecting employees from permit space hazards and for regulating employee entry into permit spaces.

Permit system - Written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Prohibited condition - Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Real time instrument - An instrument that measures a chemical concentration and which can be read shortly after the measurement. Examples of real time instruments are the MSA Orion Multi-Gas Detector or colorimetric tubes.

Rescue service - The personnel designated to rescue employees from permit spaces.

Retrieval system - The equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

Testing - The process by which the hazards that may confront entrants of a permit space are identified and evaluated.

1.0 Responsibilities:

Attendant - Responsible for remaining outside of one or more permit spaces, maintaining communication with CS entrants, monitoring the entrants for signs and symptoms of exposure, restricting access to unauthorized personnel, and requiring personnel to evacuate the CS if hazardous conditions occur or the attendant cannot perform his duties.

Entry Supervisor (ES) - Overall responsibility for the safety of the entry team and completing any permits required to perform the entry and associated work. The ES contacts the Health and Safety Office providing them with relevant information such as CS location, purpose of entry, and tools/equipment to be used in the space. The ES is trained for his duties as Entry Supervisor, assembles a qualified CS team and ensures that all controls listed on the entry permit are in place and that the monitoring results are within the acceptable concentrations, before authorizing initial entry. Ensures that the pre-entry briefing is performed and includes signs and symptoms of exposure. Prohibits entry into areas with potential CS hazards until after the space is evaluated and identified hazards controlled. Reviews the entry requirements and initials the space next to each condition that is verified as being controlled. Also completes the Debriefing Record as part of the CS close-out and submits it to the Health and Safety Office.

Entrant - Does not enter unless trained in confined space entry. Performs the entry in accordance with the CSEP e.g. remains in communication with the attendant, knows the CS hazards, knows the symptoms of exposure, evacuates the CS if exposure symptoms or additional hazards are detected, and notifies the attendant if exposure symptoms occur or additional hazards are detected. Wears required monitoring instruments and evacuates the CS if the instrument alarms.

Health and Safety Office - Identifies confined spaces and maintains the inventory list. Ensure that each permanent CS is posted. Identify the hazards and testing requirements on the Confined Space Entry Permit. Perform annual review of permits.

2.0 Procedure

All permit-required confined spaces listed on the inventory will be identified by signs indicating: DANGER - PERMIT-REQUIRED CONFINED SPACE - DO NOT ENTER. The sign colors will be red, black, and white as specified by 29 CFR 1910.145(d)(2). No employee will enter a permit-required confined space without proper notification to Health Safety and preparation of the required permit and specified pre-entry testing.

2.1 Confined Space Entry Permit (CSEP)

2.1.1 Before entry into an area known or suspected to be a Permit Required confined space the Entry Supervisor shall contact the Health and Safety Office and then complete the Confined Space Entry Permit ***(Attachment A)***.

2.1.2 The Health and Safety Office will help the Entry Supervisor by identifying hazards associated with entry. The Health and Safety Office will consider the historical CS hazards, equipment and activity hazards, and control measures to determine testing requirements, testing frequency and maximum airborne concentrations for entry. Continuous monitoring will be required for sewer entries and other areas where CS isolation cannot be achieved and there is a potential source of airborne contaminants.

2.1.3 The CSEP will be valid for one shift or as specified on the permit.

2.1.4 The Entry Supervisor will perform initial testing to determine if the CS atmosphere meets the entry criteria.

2.1.5 The Entry Supervisor verifies that all required controls are in place and initials the corresponding boxes.

2.1.6 If the entry lasts for more than one shift, the Entry Supervisor for the next shift will ensure that the atmosphere is re-tested and the hazards controlled before allowing his team to enter the CS. **Exception: If the CS has been reclassified as a non-permit required CS.**

2.1.7 Using the permit information, the Entry Supervisor informs the entrants and attendant of the potential hazards, requirements for entry, communications method, exposure symptoms (if any), rescue procedures, and other relevant information.

2.1.8 The entrants and attendant sign the permit. The ES ensures that the permit is posted at the work site while the confined space entry is being performed.

2.1.9 If the hazards of the space or the work to be performed are changed, or if any prohibited condition exists, the entry will be terminated and the Health and Safety Office notified.

2.1.10 While working in a permit-required confined space, all workers should be observed closely by the entry supervisor and/or attendants for signs of difficulty. If the worker exhibits any unusual behavior, exposure signs/symptoms, or physical difficulty, the supervisor or attendant will require the employee to exit the area immediately. This will terminate the permit until additional testing and evaluation is performed.

2.1.11 After the entry is completed, the authorized supervisor shall fill in the termination time and date, sign the permit, and return it to the Health and Safety Office.

2.1.12 The Health and Safety Office retains the permits for annual review.

2.2 Confined Space Entry Permit

2.2.1 The Confined Space Entry Permit ***(Attachment A)*** includes the following information:

- The permit space to be entered (description/location) and the purpose of the entry.
- The date and authorized duration of the entry permit.
- The names of the authorized entrant(s), the authorized attendant(s), the authorized entry supervisor responsible for the space.
- The confined space hazards and associated control measures.
- The acceptable entry conditions and the results of initial and periodic atmospheric testing, including the names or initials of the tester and the time tested.
- The rescue and emergency services to be summoned and how to contact them.
- The communication procedures to be used by authorized entrants and attendants (including visual contact, voice contact, radio contact, motion detector, or other means).
- The equipment required for entry, along with any other necessary information and any other permits issued in conjunction with the confined space permit, such as a Hot Work Permit.

2.3 Pre-Entry Atmospheric Testing

Prior to entry, the space will be monitored, using real time instruments, in the following order, unless measured simultaneously.

- Oxygen Levels - the oxygen level of the space will be between 19.5% and 23.5% Oxygen. An oxygen level below 19.5% will be considered oxygen deficient and an asphyxiation hazard (IDLH). An oxygen level above 23.5% will be considered oxygen enriched and a flammable hazard (IDLH)
- Combustible gas/vapor - Any combustible gas/vapor/mist above 10% of its Lower Explosive Limit (LEL) will be considered a flammable hazard (IDLH).
- Toxics - Any level above the Permissible Exposure Limit (PEL) established by OSHA or a level exceeding any other applicable Federal or State standard will be considered an atmospheric hazard.

2.3.1 Atmospheric testing will be conducted for the initial evaluation, after installation of engineering controls (such as ventilation or inerting), and at the specified frequency specified on the CSEP. Testing shall be from top to bottom over the area to be entered. If atmospheric testing is outside of the required range, additional controls are required to enter. Ventilation is the preferred control.

2.3.2 If work in the confined space continues for more than one shift, and continuous monitoring is not used, atmospheric tests shall be repeated before entry, each shift, unless otherwise specified on the entry permit. More frequent analysis may be required based on conditions.

2.4 Reclassification of a Permit-Required Confined Space

RSCC treats all confined spaces as permit required until initial testing. Once the testing is completed the spaces will be classified as either Permit Required or Non-Permit Required.

If at any time the space meets all of the conditions below, the CS may be reclassified as a non-permit confined space by the Health and Safety Office.

If the CS is reclassified, the Health and Safety Coordinator shall certify that it meets all reclassification requirements by making a signed and dated notation on the permit stating that the CS was reclassified as a non-permit CS. The permit will be used to document the evaluation, and define the period for which the space may be entered as a non-permit CS. Changing the work being performed or changing conditions requires a re-evaluation of the CS.

2.4.1 A permit-required confined space may be reclassified as a non-permit space under the following conditions:

- pre-entry testing performed from outside the space shows no hazardous atmosphere,
- there is no potential for the development of a hazardous atmosphere,
- there are no other hazards in the space, or
- hazards can be eliminated without entry into the space. (Ventilation does not meet this requirement.)

2.4.2 The reclassification is in effect for as long as the hazard(s) remain eliminated. If an unexpected hazard arises during the entry, the entry will be immediately terminated.

2.5 Lockout/Tagout

In a permit-required confined space where the potential for an uncontrolled energy release (electrical or mechanical) exists, the lockout/tagout policy as outlined in RSCC Lockout/Tagout (Procedure 15) will be applicable.

2.6 Use of Power Tools or Lights

2.6.1 All electrical tools will either be of low voltage design (battery operated) or used with a ground fault circuit interrupter.

2.6.2 Adequate low voltage lighting must be provided or used in conjunction with a ground fault circuit interrupter. In some situations, it may be necessary to require explosion proof lighting. Where necessary, this will be specified on the permit.

2.6.3 All tools and equipment operated off of temporary wiring or extension cord(s) will be protected with a ground fault circuit interrupter.

2.7 Isolation of Lines

Various means of isolating lines (steam, chemical, water, etc.) carrying solids, liquids, or gases to the space may be used. These include:

- double block and bleed,
- slip blinds,
- blanks, or
- physical separation and misalignment at connections closest to the space, with ends capped, blinded, or plugged.

2.8 Permit-Required Confined Space Communication

2.8.1 All identified permit-required confined spaces will be posted with signs to prevent unauthorized entry and to facilitate hazard identification except as noted below. **Exceptions: Sewers and ventilation systems will not be posted.**

2.8.2 During entry, confined space openings will be barricaded or roped off to prevent personnel or objects from falling into the space.

2.8.3 A trained attendant will be provided for all permit-required confined space entries.

2.8.4 Prior to entry, a system of communication between the entrant and attendant and between the attendant and rescue team will be determined. Communications between the entrant and attendant could consist of visual observation, voice communications, hand signals, motion detector alarms, radio contact, or other forms. If portable radios or cellular telephone are relied upon to call for assistance, the Attendant shall test the equipment by calling from the CS location prior to entry.

3.0 **Prohibited Conditions**

3.1 Any entry by unauthorized personnel.

3.2 The use of internal combustion engines inside a confined space.

3.3 The use of compressed gas cylinders inside of a confined space (excluding breathing air used for respiratory protection) or leaving compressed gas lines unattended.

3.4 The use of fuel burning heaters (unless vented and specified on the entry permit and used with continuous atmospheric monitoring) inside the confined space.

3.5 Rescue attempts by untrained or improperly equipped rescuers.

3.6 Use of Air purifying respirators in IDLH atmospheres.

3.7 Powered winches (electrical, pneumatic, hydraulic, or internal combustion engines) for personnel rescue.

3.8 Entry into a permit-required confined space possessing an engulfment hazard without a retrieval system.

3.9 Entry into a permit-required confined space without the assignment of an authorized attendant.

3.10 Any activity not identified on the entry permit.

4.0 **Employee Training**

4.1 Training Requirements

All employees involved in permit-required confined space shall be trained prior to work assignments.

4.2 General Training Requirements

Training records will be maintained for the length of employment of the trainee. These records will include the employee's name, the signature of the trainer, and the training date.

5.0 **Rescue**

Rescue procedures will be determined prior to entry into a permit-required confined space. Rescue activities that require CS entry shall be performed by your local Fire Department or Rescue Squad. Non-entry rescues may be performed by the Attendant using the rescue line attached to the entrants harness.

5.1 Authorized entrant and attendant training will include confined space hazard recognition, symptom recognition, and the importance of self-rescue.

5.2 Whenever feasible, the confined space should be outfitted for non-entry rescue.

5.3 No RSCC employees have been trained in confined space rescue and should never attempt a confined space rescue.

5.4 Emergency services will be activated by calling 911. The permit will list 911 as the number to call to contact emergency services.

ATTACHMENT A

RSCC Confined Space Entry Permit						
Date Written: **Description/Location:**						
Purpose:						
Tools/Equipment:						
Atmospheric Testing - to be filled out by Entry Supervisor (ES)						
Instrument						
___Other						
___Other						
Date:						
Time:						
Oxygen 19.5-23.5%						
Combustibles < 10%						
Hydrogen Sulfide < 10 ppm						
Carbon Monoxide <10 ppm						

Entry Supervisor verifies that all required controls are implemented and initials each line before allowing CS entry.

Requirement if checked		**Specifics**	**ES initials**
Trained Personnel			
Pre-job Briefing		hazards, exposure symptoms, etc.	
Air Monitoring		__ Initial,__ Continuous, __ Every Shift, __ Other:	
LOTO mechanical hazard(s)			
LOTO electrical hazards			

Vapor Controls (chemical, water, gas, steam)		__ Drain, __ Flush, __ Ventilation, __ Isolate Pipes	
Fire/Explosion Controls		___ Inerting, __Control Ignition Sources (Rated tools, bonding)	
Communication		__ Voice, __ Radio, __ Cell Phone	
Permits		__ Hot Work	
Barricade at Entrance			
PPE			
Fall Protection (> 6 ft)			
Non-Entry Retrieval			
GFCI or battery power		Lighting, tools, equipment	
CSEP posted at worksite			
Additional Instructions:			
Stop entry if unacceptable or prohibited condition(s) detected. Inform the Health and Safety Office of Unusual Occurrences			
Health and Safety Coordinator Approval (Can be through phone conversation) 882-4565 OR 882-4541 Printed Name Date			

CS Team Members		
Function	Printed Name	Signature
Entry Supervisor		
Authorized Attendant		
Authorized Entrant(s)		

Entrant*	In	Out	In	Out	In	Out	In	Out

CS Classification Change (Completed by the Health and Safety Office)		
__ To Non-Permit CS. All CS hazards eliminated without entry. No forced ventilation required. Personnel need CS entrant training to enter, but no attendant required.		
Printed Name	Signature	Date
Debriefing Record (Completed by Entry Supervisor)		
Unanticipated hazards ___ Detected, ___ Not Detected		
Controls Added:		
Suggested Improvements:		
Printed Name:	Signature:	Date:
RETURN TO THE HEALTH AND SAFETY OFFICE WHEN ENTRY IS COMPLETE.		
IN CASE OF EMERGENCY CALL 911		

Procedure No 17
Subject: Fire Protection and Life Safety
Reference: OSHA CFR1910.157, Subpart L and NFPA 10, 13, 25, 72, 80
Distribution All Employees Review Date: February 20, 2009

Purpose:	This policy is primarily established to protect RSCC Faculty, Students, and Staff as well as reduce potential large fire losses of RSCC properties. This policy recognizes the fact that life safety is more than just a matter of safe egress. The policy includes inspection and testing requirements necessary to achieve an acceptable degree of life safety and outlines the safeguards to provide adequate egress time and protection from fire exposure.

DEFINITIONS:

Combustibles - A material (such as paper, wood, and plastic) that will ignite and burn.

Emergency Lighting - Backup power lighting systems that provide the necessary lighting in the event of any interruption of normal lighting.

Exit - That portion of a means of egress that is provided as a protected way of travel to the outside of the building or structure.

Exit Signs - Markings identifying access to exits (usually internally illuminated with battery backup power).

Fire Door - The door component of a fire door assembly that provides a specific degree of fire protection to the opening when closed.

Fire Watch - A person or persons assigned to an area for the purpose of protecting the occupants from fire or similar emergencies.

Illuminated -

> **External Illuminated:** Refers to a light source that is contained outside of the device or sign that is to be illuminated.
>
> **Internal Illuminated:** Refers to a light source that is contained inside the device or sign that is to be illuminated.

Means of Egress - A continuous and unobstructed way of travel from any point in a building or structure to exit access.

Fire Alarm Pull Station - Manually activated device when pulled activates the fire alarm system.

RESPONSIBILITIES:

A. Building Coordinators

1. Perform monthly inspections as outlined on ***Attachment A*** and submit to the Health and Safety Office.

2. Notify responsible parties of discrepancies.

3. Follow-up of corrective actions.

B. Physical Plant

1. RSCC Security

a. Perform monthly inspections as outlined on ***Attachment B*** and ***Attachment C*** and submit to the Health and Safety Office.

b. Submit work request as needed.

c. Follow-up of corrective activities.

2. Safety Coordinator

a. Develop, implement, and maintain the Fire Protection and Life Safety Program.

b. Provide the necessary training to employees.

c. Maintain inspection logs.

d. Assign corrective actions.

e. Complete work orders to fix discrepancies.

f. Follow-up of corrective actions.

g. Maintain training records.

8. Maintain inspection documentation.

GENERAL LIFE SAFETY INSPECTIONS (See *Attachment A*):

General Life Safety Inspections will be the responsibility of the Building Coordinators or their designee. Complete ***Attachment A*** as follows:

A. EXITS

1. Are corridors/hallways clear of all obstructions? Verify that all exit pathways are clear and that furniture, decorations, equipment, etc. will not hinder people's ability to exit the building in a safe manner. All exit pathways should be maintained at a width greater than 36 inches at all times.

2. Are stairwells/stairways clear of all obstructions? Verify that all stairwells/staircases are clear of obstructions and not being used as storage areas, especially under stairwells. Storage in stairwell areas increases the combustible load in an area designed to protect people from fire exposure during egress.

3. Are the electrically illuminated exit signs working (lighting)? Verify all exit signs are illuminated (bulb not burned out).

4. Are exit stairwell doors (fire doors) being kept closed? Verify that all fire doors are closed and not propped open. The only exception is when fire doors are being held open by an electromagnetic door holder. This type of door holder is tied into the fire alarm system and will release the doors when the fire alarm is activated.

5. Can interior exit doors be opened in one motion and without the use of a key or special knowledge or effort? Verify no exit doors have been locked in such a way (i.e., chained and padlocked) that would not allow someone to exit safely through these designated exits.

B. FIRE AND LIFE SAFETY DEVICES/EQUIPMENT

1. If your building has a fire alarm system, are the pull stations visible (no obstructions placed in front of)? Verify that no furnishings, decorations, plants, office supplies, etc. are placed in front of the pull stations in such a way that it obscures the view of the pull station or hinders its accessibility.

C. STORAGE ROOMS

1. Are storage rooms being kept in a neat and orderly manner? Verify that storage areas are not cluttered or piled high with unnecessary excess combustibles (paper, plastic, trash, etc.).

D. FIRE HAZARDS

1. Are extension cords being used instead of permanent wiring? Verify that people are not using extension cords as a permanent fix instead of a temporary one and that the cord is not presenting a trip hazard.

2. Are any covers on electrical devices (outlets, junction boxes, etc.) missing or any electrical wires exposed? Identify electrical devices that you see missing covers and any electrical devices that do not look right (i.e. exposed wires).

3. Are flammable and combustible liquids stored appropriately? Verify flammable and combustible liquids are stored in fire cabinets and that containers are closed. Verify that flammable and combustible liquids are not being stored near electrical devices such as space heaters, breaker boxes, or other devices that may present an ignition source.

E. EMERGENCY PLANS

1. Are your building fire prevention and emergency action plans up to date? Verify plans are up to date and that the evacuation plan is posted.

2. Are the staff aware of disabled persons(s) in their area who may need assistance out of the building (i.e., a hearing impaired person may need assistance to advise them of a fire alarm sounding)? Verify the location of individuals in the building that may require special needs in the event of an evacuation. Notify the Health and Safety Office to develop an evacuation plan for those needing special assistance.

3. Are employees aware of the campus fire alarm evacuation procedures? Verify employees in the building are familiar with evacuation procedures. Identify new employees that may need to be made aware of evacuation procedures.

MONTHLY BUILDING INSPECTIONS (See *Attachment B*)

Monthly fire protection equipment and life safety equipment inspections will be the responsibility of the RSCC Security. RSCC Security will complete ***Attachment B*** as follows:

A. FIRE EXTINGUISHERS

1. All portable fire extinguishers have been inspected and accounted for? Inspect and account for all portable fire extinguishers in your zone to ensure they are properly mounted, pressurized, and not obstructed. Gages should show a full charge.

2. You have initialed the tags on all the fire extinguishers for the appropriate month? The inspection will be documented by initialing the appropriate month on the fire extinguisher tag.

3. Please list any fire extinguishers that are deficient, missing or are past its annual service date. List any extinguishers found to be deficient during your inspection (i.e., low pressure, missing, past its annual service date, damaged, etc.). The Health and Safety Office will submit a work request to the Physical Plant to ensure corrective action and prompt service whenever portable fire extinguishers are deficient, are missing from its intended location, or are beyond its annual service date.

Note: Annual fire extinguisher inspections and maintenance will be performed by contractors based in accordance with NFPA requirements and the manufacturer's recommendations. Responsibility for verifying compliance and oversight of contractor's inspection/maintenance program will be that of the Physical Plant Director. Documentation will be maintained by the Health and Safety Office.

B. FIRE SPRINKLER SYSTEMS

Annual fire sprinkler systems inspections and maintenance:

1. Gauges have been inspected, are in good condition, and normal water supply pressure is being maintained? Verify gauges are in good condition and normal pressure is being maintained.

2. Control valves have been inspected, are in good condition, and locked in the open position? Verify control valves locked in the open position and are in good condition.

3. Annual inspection tag is present and is not past its service date? Verify tag is present and within service/inspection date.

4. Please identify the building and list any deficiencies. List any deficiency discovered during inspection and report immediately to the Health and Safety Office.

Complete ***Attachment B*** on a MONTHLY basis and submit to the Health and Safety Office as soon as the report is complete.

Note: Annual sprinkler systems inspections and maintenance will be performed by contractors based in accordance with NFPA requirements and the manufacturer's recommendations. Responsibility for verifying compliance and oversight of contractor's inspection/maintenance program will be that of RSCC Security. Documentation will be maintained by the Health and Safety Office.

LIFE SAFETY DEVICES / EQUIPMENT (See *Attachment C*)

Life safety equipment inspections/testing will be the responsibility of RSCC Security or their designee. All **EMERGENCY** lighting and **EXIT** lighting will be inspected/tested and documented on ***Attachment C***.

A. LIFE SAFETY DEVICES/EQUIPMENT

1. All emergency lights have been inspected and tested? Verify lights have not been damaged in any way. Push the test button and hold for 30 seconds. Verify the lights come on and stay on during the test period. Power can also be disabled verifying lights come on and stay on during test period.

2. Please list any emergency lights that are deficient or fail inspection/test. If any lights fail inspection/test, please complete work requests to correct deficiencies. List the deficiencies on the table provided including the work order number for corrective actions.

3. All illuminated emergency EXIT signs have been inspected and tested? Verify EXIT signs have not been damaged in any way. Push the test button. EXIT signs with no battery backup will go off when the test button is pushed (EXIT signs with no battery backup are used in areas that have emergency lighting to externally illuminate the EXIT sign). For EXIT signs with battery backup hold the test button for 30 seconds. Verify that the lights in the sign remain on during testing. Power can also be disabled verifying lights come on and stay on during test period.

4. Please list any emergency EXIT signs that are deficient or fail inspection/test. If any EXIT signs fail inspection/test, please complete work requests to correct deficiencies. List the deficiencies on the table provided including the work order number for corrective actions.

THIS INSPECTION REPORT MUST BE TURNED INTO THE HEALTH AND SAFETY OFFICE WHEN TEST/INSPECTION HAS BEEN COMPLETED.

Attachment A

MONTHLY FIRE AND LIFE SAFETY INSPECTION
CHECK LIST FOR BUILDING COORDINATORS

BUILDING _____ MONTH_____YEAR_____

A. EXITS Performed By – Signature_____

1. Are corridors/hallways clear of all obstructions? [ ]Yes [ ] No
2. Are stairwell/stairways clear of all obstructions? [ ]Yes [ ] No
3. Are the electrically illuminated exit signs working (lighting)? [ ]Yes [ ] No
4. Are exit stairwell doors (fire doors) being kept closed? [ ]Yes [ ] No
   (The exception is if rated fire door is held open by an electromagnetic door holder activated by the fire alarm system.)
5. Can interior exit doors be opened in one motion and without use of a key or special knowledge or effort? [ ] Yes [ ] No

B. FIRE AND LIFE SAFETY DEVICES/EQUIPMENT

1. If your building has a fire alarm system, are the pull stations visible (no obstructions placed in front of pull station)? [ ] Yes [ ] No

C. STORAGE ROOMS

1. Are storage rooms being kept in a neat and orderly manner? [ ]Yes [ ] No

D. FIRE HAZARDS

1. Are extension cords being used instead of permanent wiring? [ ]Yes [ ] No
2. Are any covers on electrical devices (outlets, junction boxes, etc.) missing or any electrical wires exposed? [ ]Yes [ ] No
3. Are flammable and combustible liquids stored appropriately? [ ]Yes [ ] No

E. EMERGENCY PLANS

1. Are your building fire prevention and emergency action plans up to date? [ ]Yes [ ] No
2. Is the staff aware of disabled persons in their area who may need assistance out of the building? (i.e., a hearing impaired person may need assistance to advise them of a fire alarm sounding.) [ ] Yes [ ] No
3. Are employees aware of the campus fire alarm evacuation procedures? [ ]Yes [ ] No

This inspection report must be completed each month and submitted to the Health and Safety Office by the 28th of each month.

Attachment B

MONTHLY FIRE AND LIFE SAFETY EQUIPMENT INSPECTION
CHECK LIST FOR RSCC SECURITY

INSPECTOR _____MONTH_____YEAR _____

BUILDING _____Signature_____Date_____

A. FIRE EXTINGUISHERS

1. All portable fire extinguishers have been inspected and accounted for? [ ] Yes [ ] No
2. You have initialed the tags on all the fire extinguishers for the appropriate month documenting your inspection? [ ] Yes [ ] No
3. Please list any fire extinguishers that are deficient, missing or are past its annual service date:

FIRE EXTINGUISHER NUMBER	DEFICIENCY

B. FIRE SPRINKLER SYSTEMS

1. Gauges have been inspected, are in good condition, and normal water supply pressure is being maintained? [ ] Yes [ ] No
2. Control valves have been inspected, are in good condition, and locked in the open position? [ ] Yes [ ] No
3. Annual inspection tag is present and is not past its service date? [ ] Yes [ ] No
4. Please identify the building and list any deficiencies:

BUILDING	DEFICIENCY

This inspection report must be completed each month and submitted to the Health and Safety Office by the 28th of each month.

Attachment C

LIFE SAFETY EQUIPMENT INSPECTION

RSCC Security

BUILDING:_____ Date: _____ Time: _____

LIFE SAFETY DEVICES/EQUIPMENT Signature_____

1. All emergency lights have been inspected and tested? [ ] Yes [ ] No

2. Please list any emergency lights that are deficient or fail inspection/test:

EMERGENCY LIGHT LOCATION	DEFICIENCY	WO #

3. All emergency EXIT signs have been inspected and tested? [ ] Yes [ ] No

4. Please list any emergency EXIT signs that are deficient or fail inspection/test:

EXIT SIGN LOCATION	DEFICIENCY	WO #

This inspection report must be completed each month and submitted to the Health and Safety Office by the 28th of each month.

Procedure No 18
Subject: Fire Protection Impairment Program
Reference: NFPA
Distribution All Employees Review Date: February 20, 2009

Purpose:	To establish procedures to be followed when a fire protection system is taken out of service due to construction, alteration, power outage, repair, or an emergency condition. These procedures include measures taken during the impairment to ensure that increased risks are minimized and the duration of the impairment is limited. Procedures set forth in this policy do not apply to routine scheduled maintenance or testing.

OVERVIEW

The probability of a fire or explosion causing major damage is increased whenever a fire protection system is impaired. The longer the fire protection system is impaired, the greater the probability becomes. Therefore, it is necessary to minimize the duration and scope of any impairment or provide for an alternate protection system.

A Fire Protection Impairment Program is an effective management program used to:

- Supervise the safe shutdown of fire protection systems
- Control potential fire hazards during the impairments
- Restore the fire protection system to service as soon as possible

SCOPE

This policy applies to all RSCC employees, outside contractors and their representatives, any company representative hired by RSCC to provide services, or any outside trade workers who will be working on college property.

DEFINITIONS

Fire Protection Systems: Sprinkler systems, standpipe systems, fire hose systems, underground fire service mains, fire pumps, water storage tanks, water spray fixed systems, foam-water systems, special extinguishing systems, fire service control valves, fire alarms systems, and emergency lights.

Firewatch: A person or persons designated to physically patrol the area where the fire protection system is impaired.

Impairment: A shutdown, in whole or part, of a fire protection system.

1. ***Emergency impairment:*** When a fire protection system is out of service due to an unexpected occurrence; i.e., a ruptured pipe or an unexpected power outage.
2. ***Planned impairment:*** When a fire protection system is out of service due to work that has been planned in advance; i.e., revisions to the water supply or sprinkler piping system.
3. ***Level 1 impairment:*** When a limited number of components of a fire protection system are found defective or removed from service. A Level 1 impairment represents a minimal impact to the overall life safety of building occupants.
4. ***Level 2 impairment:*** A shutdown of an entire fire protection system, or a major portion, significantly affecting occupant life safety.

Impairment Coordinator (IC): The person who manages the impairment while system work is being performed and has overall responsibility for proper implementation of the Fire Protection Impairment Program. The Director of the Physical Plant, Security Supervisor, or a member of the Physical Plant Maintenance will be designated as the Impairment Coordinator.

RESPONSIBILITIES

RSCC Employees:

- Any employee who impairs a fire protection system, in whole or part, must first notify RSCC Security. If an impairment permit is required, the employee will attach the Fire and Life Safety System Permit/Impairment Tag (*Attachment A*) to the fire department connection for sprinkler system impairments or to the fire alarm annunciator/control panel for fire alarm systems.

Contractors, Outside Workers, Outside Company Representatives:

- Any Contractor/contractor's representative or outside worker who impairs a fire protection system, in whole or part, must first notify the Impairment Coordinator at RSCC Security. If an impairment permit is required, the contractor, contractor's representative, or outside worker will attach the Fire and Life Safety System Permit/Impairment Tag (Attachment A) to the fire department connection for sprinkler system impairments or to the fire alarm annunciator/control panel for fire alarm systems.

Impairment Coordinator (IC):

- The IC will determine the level of impairment due to a shutdown, in whole or part, of a fire protection system.
- The IC will be responsible for completion of the Impairment Worksheet (*Attachment B*) when authorizing Level 2 impairments.
- The IC will be responsible for issuing and verifying removal of Fire and Life Safety System Permit/Impairment Tags when authorizing Level 2 impairments.
- The IC will be responsible for coordination of the firewatch, if it has been determined that a firewatch is necessary. The IC will document firewatch activities on *Attachment C*, the Firewatch Log Sheet.
- The IC will be responsible for providing training to RSCC employees who will be utilized as firewatch personnel.

IMPAIRMENT COORDINATION PROCEDURES – LEVEL 1

- All level 1 impairments, both preplanned and emergency, must be reported to the impairment coordinator.
- RSCC Security will be notified of a preplanned impairment of a fire alarm system.
- The fire alarm monitoring company, if utilized to monitor that particular fire alarm system, will be notified of a preplanned impairment of a fire alarm system.
- The impairment coordinator will ensure that level 1 impairments are satisfactorily remediated.

IMPAIRMENT COORDINATION PROCEDURES – LEVEL 2

Preplanned Impairments

- RSCC Security will be notified of a preplanned impairment of a fire alarm system.
- The fire alarm monitoring company, if utilized to monitor that particular fire alarm system, will be notified of a preplanned impairment of a fire alarm system.
- The maintenance supervisor will be notified of the preplanned impairment.
- The impairment coordinator will complete the Impairment Worksheet (*Attachment B*).
- The impairment coordinator will complete the Fire and Life Safety System Permit/Impairment Tag (*Attachment A*). The IC will authorize the preplanned impairment and verify that the following procedures have been implemented:
    1. The extent and expected duration of the impairment have been determined.
    2. The areas or buildings involved have been considered and the increased risks determined.
    3. When a required automatic sprinkler system is out of service for an extended duration, the impairment coordinator will arrange for one of the following:
        a) Evacuation of the building or portion of the building affected by the system out of service, or
        b) A fire watch for all portions of the building left unprotected by the shutdown until the fire alarm or sprinkler system has been returned to service. A fire watch utilized for a fire alarm or automatic sprinkler system shutdown will be composed of individuals beyond normal staffing, assigned to walk the areas affected. The number of fire watch personnel utilized will be determined by the impairment coordinator. Firewatch personnel used for fire alarm shutdowns must be specially trained in fire prevention and in occupant and fire department notification techniques. Fire watch personnel used for automatic sprinkler system shutdowns must be specially trained in fire prevention and in the use of fire extinguishers, and in occupant and fire department notification techniques.
    4. When a required fire alarm system is out of service for an extended duration, the impairment coordinator will arrange for one of the following:
        a) Evacuation of the building or portion of the building affected by the system out of service, **or**
        b) Implementation of mitigating measures for the period that the system is impaired. This considers the building occupancy type, nature and duration of impairment, building occupancy level during the impairment

period, active work being conducted on the fire alarm system during the impairment, condition of other fire protection systems and features, and hazards and assets at risk. Appropriate mitigating measures range from simple occupant notification to full-time fire watch.

5. Sprinkler systems - the impairment coordinator will complete or authorize a Fire and Life Safety System Permit/Impairment Tag (*Attachment A*), making sure it is located at the fire department connection, indicating which system, or part thereof, has been removed from service.
6. Fire alarm systems - the impairment coordinator will complete or authorize a Fire and Life Safety System Permit/Impairment Tag (*Attachment A*), making sure it is located at the fire alarm annunciator or fire alarm control panel.

Emergency Impairment Procedures

When an emergency impairment occurs, emergency action will be taken to minimize potential injury and damage.

- The impairment coordinator will implement items 1 through 6 of section *Preplanned Impairments* with the following exception:
    - Any damage to fire protection systems caused by the contractor will be repaired by a licensed fire protection company at the contractor's expense. Any required firewatch activities due to damage of the fire protection equipment will be supplied by the contractor. Contractor must supply their own firewatch activities to ensure compliance with this policy and other RSCC policies.

Restoring Systems to Service

When all impaired equipment is restored to normal working order, the impairment coordinator will verify that the following procedures have been implemented:

- Any necessary inspections and tests have been conducted to verify that affected systems are operational.
- Maintenance supervisors have been advised that protection is restored.
- If a fire alarm system is involved, RSCC Security and the monitoring company (if any) have been advised that protection is restored.
- The Fire and Life Safety System Permit/Impairment Tag has been removed.

REFERENCES

NFPA 1 – 13.3.4 (2003 ed.), Uniform Fire Code
NFPA 25 – 14 (2003 ed.), Maintenance of Water Based Fire Protection Systems
NFPA 72 – 4.6 and 10.2.1.2, National Fire Alarm Code
NFPA 101 – 9.6.1.7 and 9.7.6 (2003 ed.), Life Safety Code
International Fire Code, 2003 ed.

Fire and Life Safety System Permit/Impairment Tag

(Please attach tag to Fire Department Connection or
Fire Alarm Annunciator/Control Panel)

Building Name:_____

Type of system impaired:_____

Reason for impairment:_____

Extent of impairment:_____

Date system shutoff:_____

Expected date of restoration:_____

Impairment authorized by:_____

Attachment B

Impairment Worksheet

Core Information

Today's date:_____ Bldg: _____

Type of system impaired: _____

Extent of impairment: _____

Reason for impairment: _____

Date impairment to begin: _____ Estimated completion date: _____

Person(s) conducting work: _____

Person responsible for mounting impairment tag: _____

Firewatch required? _____ If yes, number of persons: _____

Reminders

Area inspected and risks determined? _____

Prohibitions involved? _____

Building evacuated? _____ Impairment tag issued? _____

Notifications

Has RSCC Security been notified of the impairment? _____

Has monitoring company, if any, been notified of the impairment? _____

Has the maintenance supervisor been notified of the impairment? _____

Restoration

Has the affected system been inspected and tested operational? _____

Has the impairment tag been removed? _____

Has RSCC Security been notified of the restoration, if a fire alarm system? _____

Has the fire alarm monitoring company (if any) been notified of the restoration? _____

Has the maintenance supervisor been notified of the restoration? _____

Attachment C

Firewatch Log Sheet

Date	Name(s)	Time	Area Checked

Please return this form to RSCC Security.

Procedure No 19
Subject: Laboratory Chemical Hoods
Reference: ANSI/AIHA/ASHRAE
Distribution All Employees Review Date: February 20, 2009

Purpose:	The purpose of this policy is for Laboratory employees using chemical hoods to be protected from hazardous chemicals. RSCC laboratory chemical hoods are tested annually by RSCC Maintenance Department.

Face velocity measurements are performed in accordance with ANSI/AIHA Z9.5-2003, *Laboratory Ventilation Standard* and ANSI/ASHRAE 110-1995, *Method of Testing Performance of Laboratory Fume Hoods.*

Laboratory chemical hoods determined to have an average face velocity less than 90 feet per minute using an air velocity meter will be repaired. Safe work procedures have been developed to protect RSCC Physical Plant maintenance personnel and laboratory students, faculty and staff from potential exposure to hazardous materials while laboratory ventilation exhaust systems are inspected and repaired.

Scope

This policy applies to all RSCC Physical Plant maintenance employees. Contractors hired to work on the laboratory ventilation exhaust system will be notified that hazardous materials are used in the chemical hoods.

RESPONSIBILITIES

Maintenance Supervisors:

1. Assure that employees assigned to work on laboratory chemical hood exhaust systems are adequately trained and utilize the appropriate personal protective equipment.

2. Assure that maintenance work requiring the shut-down of the system is coordinated with the laboratory or department.

Maintenance Employees:

1. Perform work in a manner consistent with this policy utilizing the appropriate personal protective equipment.

Pre-Maintenance Procedures:

1. Whenever service requires that a laboratory chemical hood, biological safety cabinet or other local exhaust system be shut down, the designated laboratory supervisor or department chair must be informed of the time and duration of the shut-down. The Maintenance Supervisor is responsible for arranging the shut-down.

2. Whenever work is scheduled on the laboratory ventilation system, laboratory staff must confirm that hazardous materials have been secured. Laboratory staff is also responsible to assure that a work area in laboratory space is cleared of laboratory equipment; maintenance staff need room to place their tools and may occasionally need room to place a ladder. **NOTE: Facilities maintenance employees shall not remove, alter, or move laboratory equipment or chemicals. Laboratory staff is responsible for removing items from laboratory hood cabinets.**

3. Immediately before an exhaust system will be shut down, the sign shown in ***Attachment A*** must be placed on the sash of the chemical hood.

MAINTENANCE PROCEDURES

Physical Plant employees are only authorized to work on the clean side of the laboratory ventilation system. Any repairs on the dirty side of the chemical hoods require a safety evaluation and written approval from the Vice President for Financial Services.

Clean side work for our purposes deals with maintenance and repairs on the laboratory ventilation exhaust system without cutting into or sticking in part of the body into a duct or hood enclosure. The following are some examples of clean work authorized by the Physical Plant but is not entirely inclusive of all work that can be performed safely:

1. Inspect the fan housing, vibration isolator, and the duct work for leaks. Seal leaks.

2. Check the condition of the fan motor and sheave for problems; i.e., v-belt tension, v-belt condition, etc.

3. Check the electrical system for problems; i.e., blown fuse, circuit ground fault, etc.

IN ALL SITUATIONS THAT INVOLVE WORKING ON THE CLEAN SIDE OF A LABORATORY VENTILATION EXHAUST SYSTEM, THE EXHAUST SYSTEM MUST BE LOCKED OUT USING THE HEALTH AND SAFETY NOTICE (***Attachment B***) AND NO AIRFLOW WILL BE EXHAUSTED FROM THE SYSTEM.

PERSONAL PROTECTIVE EQUIPMENT

At a minimum, Physical Plant maintenance personnel are required to:

1. Wear the following personal protective equipment when working on the clean side of the hoods: *chemical resistant gloves, safety goggles or face shield.*

2. After completing maintenance tasks, wash the outside of re-useable gloves or discard disposable gloves.

3. Wash hands and face.

Health and Safety Notice

RSCC Physical Plant will be shutting down Laboratory Ventilation Systems on:

Date: _____
Building: _____
Floor: _____
Time: _____

DO NOT USE Laboratory Chemical Hoods during this time!

Please call the Physical Plant Office if you have any questions.

Health and Safety Notice

This Chemical Hood is currently being serviced.

DO NOT USE!!!

If you have questions, Please call the Physical Plant Office at 882-4565